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**An investigation into risk assessment and staff coping
with patient perpetrated violence in inpatient forensic
psychiatric settings.**

Katherine Louise Nunn



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Doctorate in Clinical Psychology
University of Edinburgh May 2018

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Thesis Portfolio Overview

The present thesis was carried out in part fulfilment of the Doctorate in Clinical Psychology at the University of Edinburgh. It is presented in portfolio format, comprising of two individual papers although a total thesis abstract provides an overview of the entire thesis. The first paper is a systematic review of existing empirical research. It explores the predictive validity of risk assessment tools for imminent (short-term) violence and aggression in forensic psychiatric settings. The second paper is an empirical study exploring how frontline nursing staff both predict and emotionally cope with experiencing violence and aggression in a high-security setting. Paper one was prepared for *Aggression and Violent Behavior* and paper two for *The International Journal of Forensic Mental Health*; so, follow their respective author guidelines.

Word Count:

Systematic review = 5,816

Empirical study = 8,449

Total thesis portfolio = 14,265

Lay Summary

Workplace violence and aggression (VA) is a common and increasing problem faced by health care workers. Mental health nurses are at higher risk than their healthcare colleagues of being exposed to patient perpetrated violence, and this has been linked to many negative and detrimental outcomes for staff, patients and hospital organizations as a whole. National guidelines push for a focus on prevention of VA where possible to reduce harm caused to staff and patients. That said, research has not yet identified a risk assessment tool or strategy that is completely accurate. As such, it seems important to recognize the significance of both prediction, and post incident support for times when prediction fails.

Research has tended to focus on risk assessment tools which are used for the longer-term assessment of risk of violence, for instance over months or years, in order to help clinical teams decide when to move a patient into lower levels of security or back into the community, and as such, the existing literature has tended to neglect the prediction of shorter-term VA (i.e. over days to weeks). Additionally, whilst past research shows high levels of violence and aggression, and high levels of staff burnout and stress, there is relatively little work investigating how nursing staff predict or cope with such experiences or identifying how best to support staff. Interestingly, secure (forensic) settings have been under-represented within existing work in the area, and it is these settings that provide care and treatment for mentally disordered patients who, because of their dangerous, violent or criminal propensities, cannot be cared for in any other setting.

The current thesis is therefore made up of two papers which aim to address these gaps in the literature. The first paper is a systematic literature review, which aimed to investigate the predictive validity of existing risk assessment tools; i.e. how well existing tools actually predict real life violence and aggression over a short-term, imminent timeframe. The second paper is an empirical study, which aimed to investigate the day-to-day strategies nursing staff use to predict violence and aggression on the ward, and to explore their reactions to, and ways of coping with these incidents. Both studies focused on forensic psychiatric inpatient settings.

Dedication

To Matt and Felix. Thank you for all the cups of tea, supportive hugs, chats about long cross-country commuting, and managing all of the endless housework. We got there in the end, now let's plan a wedding and have some fun!

Acknowledgements

This has been one of the most challenging and yet rewarding projects I have completed. This would not have been possible without the support of numerous people; Matt, my friends, family, my supervisors, my wonderful DClin cohort, and of course my cat Felix who sat with me on numerous study days when there seemed to be no end in sight.

Foremost, I would like to thank my academic supervisor, Ethel Quayle whose advice, support and expertise has been invaluable. My sincerest thank you also to my clinical supervisor Joe Judge, for both his academic and clinical guidance over the years.

I would also like to say a big thank you to all the nursing staff involved in this project as participants, who have helped me greatly by sharing their own stories and experiences. I am extremely grateful for their honesty and kindness and this thesis would not have been possible without them.

Last but not least, I would like to thank Matt, my family and my friends, for supporting and accompanying me on my journey from applying to the doctorate to here; finally completing and handing in my thesis.

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Thesis Portfolio Abstract

Mental health, and forensic mental health nurses have been identified as being at particular risk of experiencing patient perpetrated violence and aggression (PPVA). There is relatively little research investigating how nursing staff predict and cope with more immediate, imminent inpatient violence and aggression, specifically within secure (forensic) settings. Negative outcomes of PPVA are widely accepted and demonstrated within empirical literature, including increased anxiety and stress for staff, fractures to the therapeutic relationship between patients and staff, and difficulties with staff retention and absenteeism for the organization.

Due to the extensive negative outcomes associated with PPVA, a wealth of research has focused on developing the area of violence risk assessment. Despite this, there remains limited understanding regarding the utility of existing risk assessment tools for predicting and assessing violence risk over brief time frames (i.e. days to weeks). Therefore, a systematic review was conducted to explore the predictive validity of violence risk assessment tools for imminent, short-term risk in inpatient forensic psychiatric settings. Findings demonstrated that multiple tools had decent predictive validity, however quality scores were impacted by small sample sizes. The Dynamic Appraisal of Situational Aggression- Inpatient Version was the most effective tool with the highest mean quality score. The main limitations were the small number of studies assessing some of the included tools and the level of ambiguity between studies regarding the definition of imminent, short-term violence. Developing a shared understanding of what constitutes short-term risk and improving the number and quality of studies on the largely neglected tools, should therefore be research priorities.

How nurses actually recognize and predict inpatient violence and aggression in forensic psychiatric settings, and how they emotionally cope with the aftermath, are poorly explored and understood processes. A social constructivist grounded theory approach was used to analyze the transcripts from 12 interviews with frontline nursing staff from an inpatient high-security setting. A model was constructed integrating nurses' beliefs and assumptions about subtypes of violence, their efforts to use observation skills in order to

aid risk prediction, and their resultant emotional experiences following PPVA. Nurses emotional coping seemed to be affected by several factors relating to the culture of the organization and the accessibility of support. Seemingly, knowing the patient helped nurses to better identify underlying needs leading to violent behavior. This understanding helped nurses to implement targeted, needs-led interventions to address these unmet needs, and so reduce recurrent and cyclical violence. Recommendations are made to build upon, and utilize nursing skills in risk prediction and management, and to help better support the emotional impact of experiencing PPVA within forensic psychiatric settings.

Predictive validity of risk assessment tools for imminent inpatient violence and aggression in forensic psychiatric settings: a systematic review

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As prepared for Aggression and Violent Behavior (see Appendix E)

5,816 words

Abstract

Objectives: This systematic review evaluated the predictive validity of violence risk assessment tools for imminent risk in inpatient forensic psychiatric settings. Here, imminent risk constituted anything between 24-hours up to 4 weeks.

Method: Nine databases, including grey literature, were included in a systematic literature search. Reference lists and an online search engine were used to identify further relevant studies. Key study characteristics and predictive validity estimates were extracted from included studies. Study quality was systematically assessed using a quality criteria tool.

Results: Thirteen studies, evaluating eleven risk assessment tools and various corresponding subscales were included in this review.

Conclusion: The most effective tool with the highest mean quality score was the Dynamic Appraisal of Situational Aggression - Inpatient Version (DASA-IV). Other tools and subscales had good predictive validity, however quality ratings were affected by small sample sizes. The limited number of studies assessing some tools and the level of ambiguity between studies regarding the definition of *imminent* violence were key limitations. Developing a shared understanding of what constitutes imminent risk and improving the number and quality of studies on the largely neglected tools, should therefore be research priorities.

Keywords: Risk assessment, Imminent risk, Predictive validity, Forensic

1.Introduction

Inpatient violence and aggression are pertinent problems on forensic psychiatric wards (Jeandarme et al., 2016; Kelly, Subica, Fulginiti, Brekke, & Novaco, 2015; Nicholls, Brink, Greaves, Lussier, & Verdun-Jones, 2009). Over just a four year period across the whole National Health Service (NHS) in the UK, a 70% increase in violence was observed (Paterson, Miller, Leadbetter, & Bowie, 2008). Moreover, the National Institute for Health and Clinical Excellence (NICE; 2015a; 2015b) reported that approximately 75% of NHS staff experience violent behavior annually, predominately occurring in psychiatric settings. In forensic psychiatric settings specifically, the proportion of physically assaultive patients has been shown to range from one fifth of individuals (Kuivalainen, Vehvilainen-Julkunen, Putkonen, Louheranta, & Tiihonen, 2014) to almost 60% of individuals (Dernevik, Grann, & Johansson, 2002). Research has struggled to provide a clear picture as to which psychiatric settings have the highest levels of patient violence. Some papers have indicated, perhaps surprisingly, that civil psychiatric settings have higher rates than forensic (Kuivalainen et al., 2014) however, a meta-analysis reviewing inpatient violence and aggression revealed that rates of violence were significantly higher for forensic inpatients than in civil psychiatric settings (Bowers et al., 2011). Whilst exact causal reasons for patient violence remain unclear; it has been hypothesised that increasing waiting times, greater demand with fewer frontline staff, greater dependency on agency and non-permanent staff and 'growing frustration as the NHS struggles to cope' as likely contributors within general and civil health settings (Smith, 2012). Moreover, in forensic settings, patients are often subject to restrictive practices, wards with many rules and strict routines, higher levels of security and at times restraint and seclusion which have all been suggested as potential contributors to heightened aggression (Maguire, Daffern, Bowe, & McKenna, 2017).

Patient perpetrated violence and aggression has been correlated with adverse outcomes for both staff and patients such as fear, anger, frustration and stress (Lee, Daffern, Ogloff,

& Martin, 2015; Maguire, Daffern, Bowe, & McKenna, 2017), and it has also been shown that between 9-10% of nurses exposed to violence go on to meet criteria for post-traumatic stress disorder (Jacobowitz, 2013). Other negative outcomes include reduced morale, high staff turnover, damaged therapeutic climate and reduced self-esteem (Baby, Glue & Carlyle, 2014; Chan & Chow, 2014). As such, clinical teams must make daily decisions about how to best manage risk in order to maintain safe wards for staff and patients, whilst continuing to prioritize and achieve therapeutic work. Consequently, nurses are often left trying to balance ‘security versus therapy’, ‘dangerousness’ and ‘management of violence’ (Mason, King, & Dulson, 2009).

Whilst risk assessment is important in trying to reduce violence and aggression, and their negative outcomes, it is also necessary for clinicians to remain mindful of the principle of being least restrictive; meaning that they must not become overly cautious without cause to do so (Department of Health, 2012; Millan Committee, 2001). This is in-line with clinical guidance to use risk assessment and other preventative strategies (medication, staff/patient relationships and de-escalation work) over seclusion and restraint where possible (NICE, 2015a; 2015b).

1.1 Approaches to risk assessment

There are three main approaches to risk assessment; ‘unstructured clinical judgement’ (UCJ), ‘actuarial’ and ‘structured professional judgement’ (SPJ) assessments (Geraghty & Woodhams, 2015). The first; UCJ, was based solely on the expertise, experience and opinion of the clinician which was found to be no better than chance at predicting future violence (Guay & Parent, 2018; Hanson, 2009). This led to the development of a new-wave of structured risk assessment tools, beginning with actuarial assessments. These are based on static risk factors; meaning that the tools focus on historical events or variables that have been empirically linked to violent re-offending, and that are not changeable over time (e.g. having a history of violence) (Chu, Daffern, & Ogloff, 2013). These have been

praised for being clear, less open to interpretation, bias or error and for being more transparent, structured and reliable (Geraghty & Woodhams, 2015; Kemshall, 2002). Furthermore, a number of studies have shown structured tools to be far superior to UCI alone (review in: Heilbrun, Yasuhara, & Shah, 2010). Actuarial tools such as the Violence Risk Appraisal Guide (VRAG; Harris, Rice, & Quinsey, 1993) have demonstrated robust predictive validity, however Grann, Belfrage, & Tengstrom (2000) in their study exploring the predictive validity of two actuarial risk assessment tools, revealed that predictive validity was better with personality disordered offenders compared to forensic psychiatric patients with major mental health problems such as psychosis and schizophrenia. Concerns of this nature ultimately led to the development of SPJ tools, which can also take into account current clinical factors and clinically informed judgements (Hart, 1998). SPJ tools also integrate dynamic (current and changeable) with the static risk factors (e.g. The Historical Clinical Risk Management-20 [HCR-20] Version 3; Strub, Douglas, & Nicholls, 2014), and the Violence Risk Scale [VRS]; Mcniel & Binder, 1994). Supporters of actuarial approaches argue that SPJ introduces too much uncertainty and potentially faulty or biased clinical judgements (Quinsey, Harris, Rice, & Cormier, 2006). However, empirical work demonstrates that SPJ tools have also been shown to have good predictive validity (Gray, Taylor, & Snowden, 2008).

1.2 Imminent, short-term VS longer-term risk

Typically, research on risk assessment has focused on assessing future violence, for instance, how someone may behave if released into the community from a forensic inpatient setting (e.g. Gray, Taylor, & Snowden, 2008), and many assessment tools were developed to be predictive over months to years, for instance the VRAG and HCR-20. However, there is also considerable debate about the predictive validity of risk tools which utilize static factors for the assessment of shorter-term, more imminent violence. Static factors have only demonstrated moderate accuracy in the prediction of imminent violence (Starzomski & Wilson, 2015) and it has been argued that they may be more suited to the

longer-term prediction of violence (Quinsey et al., 2006). There is some indication that dynamic factors may be more pertinent in assessing shorter-term more imminent risk (Chu, Thomas, Ogloff, & Daffern, 2013; Daffern, 2007).

This conclusion has led to further research into shorter-term risk assessment, with a focus on ‘dynamic’ factors and typically, inpatient aggression (Chu, Daffern, & Ogloff, 2013; Chu, Thomas, Ogloff, & Daffern, 2013). Typically, these tools assess risk over hours to days, for instance the Dynamic Appraisal of Situation Aggression – Inpatient Version (DASA-IV; Ogloff & Daffern, 2006), the Brøset Violence Checklist (BVC; Almvik, Woods, & Rasmussen, 2000) and the Imminent Risk Rating Scale (Starzomski & Wilson, 2015). Another well researched assessment tool is the Short-Term Assessment of Risk and Treatability (START; Nicholls, Brink, Desmarais, Webster, & Martin, 2006), but this uses a timeframe of 3-6 months typically, which brings into question how we define imminent and short-term risk of violence. There is no real consensus within the literature regarding this, with papers defining short-term as from 24-hours ranging to over a month (e.g., Almvik et al., 2000; Douglas & Ogloff, 2003; McNeil, Gregory, Lam, Binder, & Sullivan, 2003; Ogloff & Daffern, 2006). START assessment recommendations state that short term assessment covers “every 1–8 weeks” (Webster, Martin, Brink, Nicholls, & Middleton, 2004). For the purpose of this paper, the short-term timeframe ranged from 24-hours to 4 weeks, following the definition laid out by Chu, Thomas, et al., (2013).

Learning more about the accurate prediction and assessment of short-term risk assessment is important. Firstly, because there is a vast literature demonstrating the negative impacts resulting from ward-based violence (e.g. Lee et al., 2015). Additionally, there is a drive towards focusing efforts on prevention rather than being reactive in risk management strategies (Luck, Jackson, & Usher, 2009). Risk assessment tools can help to predict the likelihood of violence, but also to inform the creation of risk management plans and strategies to aid with prevention.

1.3 Assessing predictive validity

Risk assessment tools help clinicians to predict the likelihood of violence behavior. However, in clinical practice, prediction is not enough; rather clinicians need to utilize risk assessment tools to advance their formulations so as to inform risk management plans and to implement strategies to try and prevent future violence. However, due to the fact there are so many tools from which to choose, it is important to know that the selected tool has good predictive validity before using it to inform risk management plans. As such, predictive validity will be the focus of the present review.

Generally, studies evaluating the predictive validity of risk assessment tools are concerned with how accurately a tool assesses the likelihood of violence, aggression or recidivism (Singh, 2013). Predictive validity is usually assessed using a Receiver Operating Characteristic (ROC) analysis, which generates an Area Under the Curve (AUC) coefficient. It is thought to be useful as AUC estimates are unaffected by, and stand-alone to, selection ratios and base rates of violence (Douglas & Webster, 1999; Rice & Harris, 1995). An AUC of .50 is equal to chance; with perfect negative prediction at 0.00, ranging to moderate prediction at .70, good at .75 and excellent above .80. Sometimes a correlation coefficient (r) is used to measure prediction instead, which measures the strength of association and direction between two variables (risk and violence/aggression) (Field, 2009; Geraghty & Woodhams, 2015).

1.4 The present study

Despite significant advances in the field of violence risk assessment, we are limited in our understanding regarding the utility of existing measures for predicting violence risk over brief time frames (i.e. days to weeks). To date, to the authors' knowledge, there has been no systematic review concerning the predictive validity of risk assessment tools for assessing imminent, short-term risk in inpatient, adult forensic psychiatric settings. The current review therefore aims to fill these gaps by examining which tools are used to

predict imminent, short-term inpatient aggression and violence within a forensic psychiatric setting in the literature, and what the tool's predictive validity is, whilst also evaluating the quality of the included empirical studies. Given the negative outcomes associated with patient-perpetrated, ward-based violence both for staff and patients (Lee, Daffern, Ogloff, & Martin, 2015; Maguire, Daffern, Bowe, & McKenna, 2017) and the stigma and restriction associated with being overly cautious, this review has added importance. This systematic review aimed to:

- Identify tools that have been used to assess risk of inpatient aggression and violence within the timeframe of 24-hours to 4 weeks within inpatient forensic psychiatric settings.
- Collate information on the predictive accuracy of these instruments and determine the accuracy with which these tools have been shown to predict aggression and violence within the given timeframe within inpatient forensic psychiatric settings.
- Determine which tools are more effective at predicting aggression and violence.
- Appraise the methodology and quality of studies included in the review.

2. Method

2.1. Review protocol

This review was conducted in accordance with the Centre for Review and Disseminations (2009). A systematic review protocol stating the search strategy, inclusion/exclusion criteria and forms of quality assessment to be used, was uploaded to PROSPERO (http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=*****). The review is reported using the PRISMA reporting guideline (Moher, Liberati, Tetzlaff, & Altman, 2009).

2.1.1 Scoping Search

In August 2017, a brief scoping search was conducted by the primary author to ascertain existing systematic reviews in this area. Cochrane Central and the Centre for Reviews and Dissemination were searched and supplemented with a hand search using Google Scholar search-engine. No systematic reviews or meta-analyses investigating imminent risk assessment in forensic psychiatric settings were identified. Additionally, existing reviews and analyses tended to focus on civil psychiatric settings and omitted forensic samples (L E O'Shea, Mitchell, Picchioni, & Dickens, 2012), or they included juvenile samples (Andrews et al., 2011; Singh, Grann, & Fazel, 2011). Some also limited their searches to relatively narrow publishing dates (Yang, Wong, & Coid, 2010) thereby possibly neglecting studies published outside these time periods. The present review is therefore novel in its contribution to the literature; whilst there are existing reviews in broadly similar areas, none specifically focus on the predictive validity of risk assessment tools for imminent, short-term violence in inpatient forensic psychiatric settings.

2.1.2. Systematic review search strategy

Searches were undertaken in October 2017 and were limited to 1980 onwards to capture the period when most risk assessment tools were developed, as well as earlier studies. Seven electronic databases were searched from January 1980 to October 2017; PsycINFO, EMBASE, MEDLINE, ASSIA, Criminal Justice Database, Social Science Database, and CINAHL. To increase the comprehensiveness of the search, grey literature was also searched using two further electronic databases; ERIC and ProQuest Thesis and Dissertations Global. Reference lists of key papers were also hand searched, and Google Search engine was used to identify any further relevant studies.

In consultation with specialist support from the University of Edinburgh library, search terms were derived from key words within the research literature and, where appropriate, wild cards were used. (See Appendix A for an example of the search strategy):

- Violence or aggression: “Violen*” OR “aggress*” OR “assault*” OR “threat*” OR “attack*” OR “abus*” OR “recidivism” OR “re-offend*” OR “repeat offend”.
- Imminence: “Immediat*” OR “short-term” OR “day to day” OR “ward based” or “imminent” OR “brief” OR “week*” OR “month*” OR “short*”
- Psychiatric forensic setting: “Inpatient*” OR “ward” OR “high secur*” OR “low secur*” OR “medium secur*” OR “psychiatri*” OR “forensic*”.
- Risk assessment tools: “Clinical judgement” OR “DRAMS or START* or structured risk assessment OR personality assessment inventory or the crisis monito or social dysfunction and aggression scale OR risk scale OR Kennedy Axis V OR Broset Violence Checklist OR BVC* OR HCR* OR DASA* OR IRRS or imminent risk rating scale* OR dynamic appraisal of situational aggression.

2.2. Inclusion/exclusion criteria

2.2.1. Population

The target population was adults (males and females) in forensic inpatient psychiatric settings. General adult psychiatric samples, juvenile samples and outpatient and community samples were all excluded from the review. Juvenile samples were omitted due to the fact that risk assessment tools utilized within this population have been specifically designed for them, for instance the Structured Assessment of Violence Risk in Youth (Borum, Bartel, & Forth, 2006) and as such, cannot easily be generalized to adult populations. Outpatient and community samples were excluded because the research team were primarily interested in inpatient, ward-based violence and aggression.

2.2.2. Intervention

Studies were included in the current review if they examined the predictive validity of any standardized risk assessment tool to predict the risk of imminent violence or recidivism. Due to the focus on imminent ward-based risk, studies were excluded if their follow-up period exceeded 4 weeks. As such, studies were included which had follow-up periods of 24-hours, 1 week, 2 weeks, 3 weeks and 4 weeks. Standardized risk assessment tools were considered to be those which have been validated on the offending population.

2.2.3. Outcome

The review addressed imminent, inpatient violence and aggression, and as such, recorded violence and aggression were the main outcome used in the review. The HCR-20 V3 (Strub, Douglas, & Nicholls, 2014) definition of violence was used, which includes any violence or threatening behavior, inclusive of verbal threats used to induce fear and/or cause harm in another person.

2.2.4. Study design

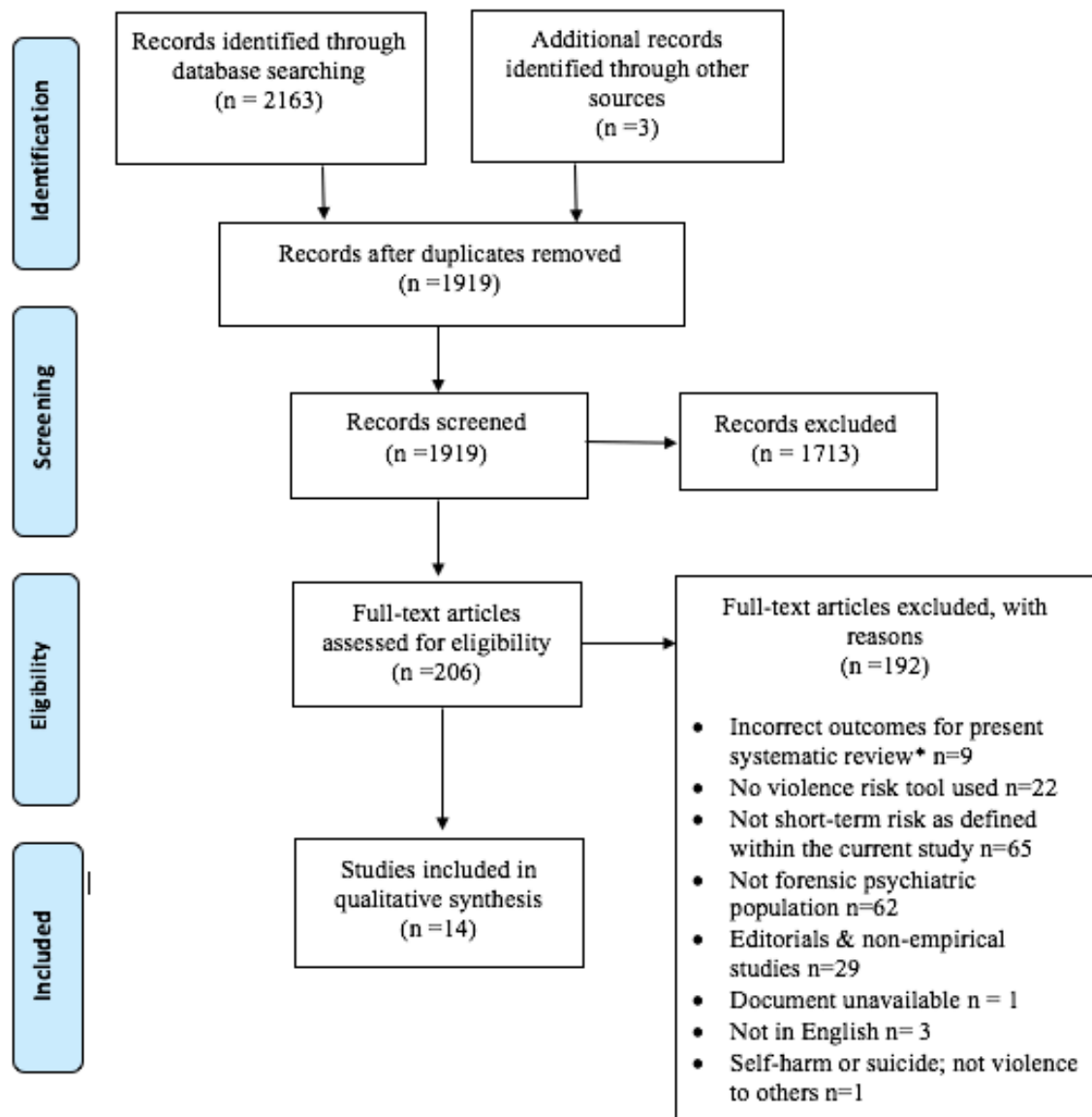
There were no limitations in terms of study design, and both retrospective and prospective designs were included. The focus was on primary studies with forensic psychiatric populations where authors predicted the likelihood of future imminent violence. Studies were omitted where empirical data were not presented (e.g. editorials, commentaries). Non-English language articles were also excluded due to time limitations and availability of reliable translation.

2.3 Study Selection

Duplicates returned by the database searches were first removed by the primary author, and then checked for accuracy by an independent researcher, leaving 1,919 articles. Titles and abstracts of these remaining articles were then screened against the

inclusion/exclusion criteria and 1,713 articles were excluded (see Appendix B for excluded studies). The full text of the remaining 206 articles was assessed by the first author and an independent reviewer assessed 75% (155 articles) for accuracy. This led to the exclusion of a further 192 articles, leaving 14 for inclusion in the current review (see Figure 1). There was no disagreement between reviewers.

Figure 1
PRISMA flow diagram (Moher et al., 2009)



*Incorrect outcomes = no use of ROC, AUC estimates or correlation coefficients; no outcomes indicating predictive validity.

2.4 Quality Assessment

Previous literature investigating the predictive validity of risk assessment tools has recognized that there is no universal framework for quality assessment in observational studies (Geraghty & Woodhams, 2015). As such, risk of bias was completed using quality criteria and rating systems outlined by Geraghty and Woodhams (2015). Their tool is based on an amalgamation of the Critical Appraisal Skills Programme (2013), the Effective Public Health Practice Project, (2008) and Centre for Review and Dissemination (2009) guidelines; sixteen of the seventeen quality criteria were appropriate for the current review and so were used to create the quality framework, using the same two-step process described by Geraghty and Woodhams (2015). Adaptations were made to reflect the population (forensic psychiatric patients) and the focus on imminent risk assessment. The 14 remaining articles were subjected to initial threshold criteria which included having a clear description of psychiatric forensic inpatients, the risk assessment tools used and the outcome measure, as well as sufficiently detailed statistical analyses regarding the prediction of imminent violence. One study failed to meet these criteria and was therefore excluded. The second step was the full quality assessment of the remaining 13 studies for inclusion in the review, using the adapted quality assessment form (Appendix C). This uses 17 quality criteria, including; selection bias, measurement bias, attrition bias, and reporting bias. Questions also assessed how generalizable the study is, the standard of statistical reporting, how clear the description of the follow-up period is and how well this was reported and whether the predictive validity of the tests were sufficiently reported. The scoring system rated a 0, 1 or 2 depending on whether a criterion was ‘not met’, ‘partially met’ or ‘fully met with no ambiguity’; whereby larger overall scores denoted higher quality. Where it was unclear whether or not a certain criterion was met, it was scored as ‘unclear’. The total number of ‘unclear’ scores was totaled for each study. Quality rating was initially completed for all included studies by the primary author. An independent reviewer then subjected all 13 included studies to the same quality assessment. There were no significant disagreements in the total quality rating scores for each paper. However, there were two minor discrepancies in domain scores for two

included studies, although these did not impact the total score for these studies. The first author discussed the discrepancies with the independent reviewer and a consensus was reached; this discussion was relayed to the research team who agreed with the final domain and total score for both papers concerned.

2.5 Data Extraction

A form was created to extract data, provide an overview of the key findings and predictive statistics, and to present the total quality rating given for each study. Initially the first author completed data extraction, which was then reviewed by an independent other and recorded in an electronic database. Where discrepancies were identified, resolution was sought through discussion and reaching a consensus. Information extracted included: the risk tool used, domains assessed (dynamic/static), approach (actuarial, structured professional judgment etc.), study type (retrospective/ prospective), sample size, age and gender, study setting, the follow-up period and the definition of short-term or imminent violence, validity statistics, and finally the total quality assessment score.

3. Results

3.1. Characteristics of included studies

Of the 13 studies included in the review, seven followed a prospective design; five were retrospective and one followed a mixed prospective-retrospective design. All studies used forensic psychiatric settings although security levels varied across studies; 6 were set in high secure settings, 2 in medium, 2 had mixed security levels, and 3 did not have a security level classified. The size of the total relevant sample was 1384 participants ($M=106.5$, range = 20 –530). The mean age of participants in studies ranged from $M=22.25$ years to $M=39.2$ years for the 10 studies where this information was provided.

There were more male than female participants in total. All studies had male participants, whilst 9 studies included female participants; 1 study did not report the gender split of participants. The overall mean number of male participants was $M=93.4$ (range= 20-405) whereas the overall mean number of female participants was $M=29$ (range= 6-125). Across the studies, 11 risk assessment tools were described (see Table 1 for all included tools), although additionally, some tool's subscales are also used (e.g. from the HCR-20 and PCL-R).

Table 1. Table of the 11 risk assessment tools within the 13 studies included in the present review

Tool	Tool Authors	Abbreviation
Brøset Violence Checklist	Almvik, Woods, & Rasmussen (2000)	BVC
Dynamic Appraisal of Situational Aggression-Inpatient version	Ogloff & Daffern (2006)	DASA-IV
Dynamic Risk Scale	(Based on) (Douglas & Skeem, 2005)	DRS
Historical Clinical and Risk Management Scale	Strub et al., (2014)	HCR-20
Health of the Nation Outcome Scale-Secure, version 2b	Dickens, Sugarman, & Walker, (2007)	HoNOS-Secure
Imminent Risk Rating Scale	Starzomski & Wilson (2015)	IRRS
Level of Service Inventory–Revised: Screening Version	Andrews & Bonta, (1998)	LSI- R:SV
Mental Health Outcomes and Assessment Tools-Risk-Assessment Module	NSW, (2001)	MHOAT-Risk
Psychopathy Checklist-Revised	Hare, (1991)	PCL-R
Short-Term Assessment of Risk and Treatability	Webster et al., (2004)	START
Violence Risk Appraisal Guide	Harris et al., (1993)	VRAG

All 13 studies stated their total follow-up periods which ranged from 24 hours to 24 months (see Table 2). Within this, definitions of short-term differed, and the time points of data collection also varied. There were 7 studies which defined short-term as 24 hours

and as such, assessed risk every 24 hours and measured rates of violence at least once within each 24-hour period. Some were repeated every 24 hours over a number of months (Hvidhjelm, Sestoft, Skovgaard, & Bjorner, 2014) and others looked at a number of patients over a single 24-hour period (e.g. Chu, Daffern, & Ogloff, 2013). Four studies looked at assessing risk once over a 4-week (month) period, but only one study clearly defined a month as ‘short-term’. One study looked at assessing risk weekly, with bi-weekly violence measurements, and the final study assessed risk once to cover a two-week period but did not provide a detailed definition of what constitutes ‘short-term’. In fact, a clear definition of what constitutes short-term, and why, was lacking from the majority of papers. Table 2 provides a summary of the main characteristics of the studies included in the review alongside extracted AUC and r statistics for the studies and the overall quality score awarded for each study.

Table 2. Summary tale of predictive validity of instruments and study characteristics

Reference	Tool/s	Validity (AUC estimate)	Approach	Domains assessed	Sample <i>n</i>	Mean age and sex	Study type	Study setting	Follow-up period	Definition of short-term/ imminent	Total Quality Assessment Score
Chan & Chow, 2014	DASA-IV BVC	Chronbach's alpha coefficient = .862 Krippendorff's alpha = .915 AUC = .973 (95% CI= .953-.992) Strong positive correlations between DASA and BVC ($r_s=.963$, $p<.001$).	SPJ Actuarial	Dynamic Dynamic	530	39.2 years Males= 405 Females= 125	Prospective	Maximum security correctional psychiatric institution	Every day for 14 days	24 hours, no definition given	20/32 Unclear: 3/16
Chu, Thomas, Ogloff & Daffern, 2013	HCR-20 Total Historical scale Clinical scale	AUC= .72 (SE .07) (95% CI=.58, .87) AUC= .62 (SE .09) (95% CI= .45, .79) AUC= .73 (SE .08) (95% CI= .58, .89)	SPJ SPJ SPJ	Dynamic Static Dynamic	66	34.42 years Male= 53 Female=13	Retrospective	High-security forensic mental health hospital	At 1, 3 and 6 months	<i>short term</i> was operationalized as follow-up periods up to a month in duration	20 /32 Unclear: 4/16

	Risk scale	AUC=.73 (SE .07) (95% CI=.59, .88)	SPJ	Dynamic							
	LSI-R:SV Total	AUC=.57 (SE .09) (95% CI=.40, .75)	Actuarial	Static/ Dynamic							
	PCL-R Total	AUC=.67 (SE .09) (95% CI=.51, .84)	Actuarial	Static							
	Facet 1	AUC=.47 (SE.10) (95% CI=.28, .66)									
	Facet 2	AUC=.66 (SE.08) (95% CI=.51, .81)									
	Facet 3	AUC=.68 (SE.08) (95% CI=.53, .83)									
	Facet 4	AUC=.63 (SE .08) (95% CI=.46, .79)									
	START	AUC=.74 (SE .08) (95% CI=.59, .90)	SPJ	Dynamic							
	VRAG	AUC=.53 (SE .09) (95% CI=.35, .70)	Actuarial	Static							
Chu, Daffern & Ogloff, 2013	BVC	AUC=.77 (SE.03) (95% CI=.71-.82)	Actuarial	Dynamic	70	34.33 years Males=55 Females= 15	Prospective	High security forensic mental	Every 24hrs, unclear total	24hrs, no other given	20 /32 Unclear: 3/16

	DASA-IV	AUC=.76 (SE.03) (95% CI=.71-.82)	Actuarial	Dynamic				health hospital	follow-up		
	HCR-20 Clinical Scale	AUC=.68 (SE.03) (95% CI=.62-.73)	SPJ (actuarial score given in study)	Dynamic							
Chu, Thomas, Ogloff & Daffern, 2011	START Risk total score	AUC=.76 (SE .09) (95% CI=.59-.93)	SPJ	Dynamic	50	34.66 years Males = 38 Females= 12	Retrospective	High security forensic hospital	1 month	Unclear, no definition given	21/32 Unclear: 2/16
	START Strength total score	AUC=.71 (SE .08) (95% CI=.56-.86)									
Daffern & Howells, 2007	DASA-IV	AUC=.65, p<.001	SPJ	Dynamic	38-40 (a whole unit was monitored)	Not given	Prospective	High security, dangerous and severe personality disorder psychiatric hospital	Every 24hrs for 4 months	24hrs, no definition given	20 /32 Unclear: 3/16
	HCR-20 Clinical scale	AUC= .63, p<.001 No CI's reported	SPJ	Dynamic							
Finch, Gilligan, Halpin & Valentine, 2017	HCR-20 -total	AUC=.91 (SE .07) (95% CI=.78-1.00).	SPJ	Dynamic	74 37 forensic (37 civil)	Not provided Male=74 Female=0	Retrospective	Low to medium secure forensic psychiatric facility	1 month	Defined as up to 1 month after time of rating	19/32 Unclear: 4/16
	-historical scale	AUC= .67 (SE .11) (95% CI=.45-.90).	SPJ	Static							
	-clinical scale	AUC= .89 (SE .08) (95% CI=.73-1.00).	SPJ	Dynamic							
	-risk scale	AUC= .91 (SE .09) (95% CI=.74- 1.00).	SPJ	Dynamic							

	-clinical + risk scale	AUC= .93 (SE .11) (95% CI=.79- 1.00).	SPJ	Dynamic							
	PCL-R	AUC= .69 (SE .11) (95% CI=.47-.91).	Actuarial	Static							
	START	AUC= 1.00 (SE .01) (95% CI=.99-1.00).	SPJ	Dynamic							
	MHOAT-Risk	AUC= .99 (SE .01) (95% CI=.98-1.00).	Unclear	Dynamic							
	HoNOS-secure	AUC= .99 (SE .01) (95% CI=.96- 1.00).	Unclear	Dynamic							
	DRS	AUC= .85 (SE .07) (95% CI=.72-.99).	Actuarial	Dynamic							
Hvidhjelm, Sestoft, Skovgaard & Bue Bjorner, 2014	BVC	AUC=.91 For a BVC score of 3 or more points, a sensitivity of 0.656 and a specificity of 0.997 for prediction of violence in the next 24 hrs	Actuarial	Dynamic	156	38.4 years Male= 150 Female= 6	Prospective	Forensic psychiatric unit – high to low security	Three times daily for 24 months	24hrs, no other definition given	19 /32 Unclear: 4/16

Maguire, Daffern, Bowe & McKenna, 2017	DASA-IV	AUC = .78 (95% CI= .73-.82)	SPJ	Dynamic	60	Not given' Median= 33.4 years Males=30 Females= 30	Retrospective	Secure forensic mental health hospital	Every 24hrs for 60 days	24hrs, no definition given	23/32 Unclear: 4/16
McKenzie & Curr, 2005	HCR-20 historical scale	AUC= .54 r=.14, p>.05	Actuarial	Static	94	35 years Male=74 Female=21	Retrospective	Medium security	2 weeks	Not defined	17/32 Unclear: 3/16
	HCR-20 clinical scale	AUC= .67 r=.40, p<.001 Combined AUC= .65 r= .49, p<001	SPJ	Dynamic							
Ogloff & Daffern, 2006	BVC	AUC=.83	Actuarial	Dynamic	100	32.95 years Male=78 Female=22	Prospective	Secure inpatient forensic hospital	Three times daily for 3 months	24 hours, no other detail given	18/32 Unclear: 5/16
	HCR-20 clinical scale	AUC=.73 Analysis revealed that a combination of 7 items produced the largest AUC value of .82. These items were combined to make the DASA, AUC values for the DASA and BVC were not significantly different from each other.	SPJ	Dynamic							

Starzomski & Wilson, 2015	Imminent Risk Rating Scale	<p>Week 1 AUC=.74 (95% CI=.60-.88)</p> <p>Week 2 AUC=.69 (95% CI=.53-.86)</p> <p>Week 3 AUC=.72 (95% CI=.54-.89)</p> <p>Week 4 (month) AUC=.57 (95% CI=.36-.77)</p>	Actuarial	Static & dynamic	121	<p>35.6 years</p> <p>Males=104 Females= 17</p>	Prospective	Mentally ill offender unit, forensic psychiatric hospital	Bi-weekly for 1 month?	1 week, no other definition given	<p>16/32</p> <p>Unclear: 3/16</p>
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Vane-Tempest, 2000	HCR-20	Overall Pearson's $r = 0.558$; $p < 0.001$),	SPJ	Static and dynamic	40	22.25 years Males = 40 Females = 0	Mixed prospective /retrospective	Medium secure forensic psychiatric unit	1 month	No definition given	19 /32 Unclear: 4/16
	-Historical	scores on the H scale of the HCR-20 (Pearson's $r = 0.438$; $p = 0.005$),									
	-Clinical	scores on the C scale of the HCR-20 (Pearson's $r = 0.430$; $p = 0.006$),									
	-Risk	scores on the R scale of the HCR-20, (Pearson's $r = 0.471$; $p = 0.002$).									
Vojt, Marshall & Thomson, 2010	DASA-IV	AUC=.74 (95% CI=.70-.79)	SPJ	Dynamic	20	36 years Males=20 Female=0	Prospective	High security forensic hospital	Every 24 hours for 6 months	24hrs, no definition given	22/32 Unclear: 3/16

Note: base rates of violence were not included in the data extraction table as very few included studies presented this data. All studies identified that ROC analysis and AUC coefficients were utilized due to them being a useful measurement of predictive validity independent of baseline violence in the studies populations (Douglas & Webster, 1999).

3.2. Data synthesis: Predictive validity of tools

Within the review the most commonly used tool to assess risk of imminent, short-term violence was the Clinical Scale from the HCR-20, with 7 studies including it in their evaluation of predictive validity. The most widely evaluated full tool in the review was the DASA-IV; evaluated by 5 studies; followed by the BVC (4 studies), and the START (total; 3 studies). Some of the less empirically scrutinized tools were newer, for instance the DRS which was created by the authors for the purpose of their paper, and the Imminent Risk Rating Scale which both were evaluated in only 1 study.

Table 3 details how widely each tool was evaluated within the review, and summarizes the mean quality scores, mean sample sizes and mean AUC values for each tool within the review. The lowest sample size for an included study was 20 (DASA-IV) and the highest was 530 (BVC; DASA-IV). The mean sample size for tools assessed in more than one study ranged from 33.5 (HCR-20 Historical Scale) to 387 (HCR-20 Clinical Scale).

AUC values $\geq .70$ are generally indicative of moderate predictive validity, with those $>.75$ indicating ‘good’ predictive validity (Geraghty & Woodhams, 2015). Studies were examined in relation to the recommended benchmark of .70 (Douglas, Guy, & Reeves, 2008). Notably 12 of the 13 studies reported AUC estimates; and one of these (Chan & Chow, 2014) only reported an AUC estimate for the DASA-IV tool and not the BVC. For one study (Vane-Tempest, 2000) the correlation coefficient (r) was used instead of an AUC estimate. There was excellent predictive validity for the DRS, HoNOS-secure, MHOAT- Risk and HCR-20 clinical plus risk scales. Studies evaluating the START presented AUC values from .74 - 1.00; indicating good to perfect positive prediction. There was good predictive validity for 4 tools and one subscale; BVC, DASA-IV, HCR-20 (full), Imminent Risk Rating Scale and the START Strength subscale. However, one study for the DASA-IV showed an anomaly with an AUC estimate of $<.70$. The PCL-R, its associated 4 facets, the LSI-R:SV, the VRAG and the HCR-20 historical scale all showed poor predictive validity for short-term, imminent risk. The HCR-20 clinical scale showed a mixed performance (AUC values ranging from .63 - .89), and only three out of 7 studies indicated a good predictive validity from AUC values and correlation

coefficients. Mean AUC figures are presented for each tool in Table 3. Looking at full tools and ignoring subscales; the best performing were; the HoNOS-secure, MHOAT-Risk, BVC, DRS, HCR-20 (full) and the START which all had mean AUC estimates $>.80$. The DASA-IV was the tool with the highest quality score, and a good AUC value.

3.3 Quality assessment

Table 3 provides a summary of the mean quality score for each risk assessment tool across the 13 included studies. There was relatively little variability in the total quality scores; the mean quality score for all was 18.08 (range = 16-23) out of a possible 32. The number of unclear items ranged from 2 to 5.

Table 4 presents the quality assessment scores for each of the included studies, broken down by type of bias and then presenting the total score for each (see Appendix D for full quality assessment scores).

Table 3. Summary table of predictive validity of instruments and study characteristics

Risk Tool	Number of studies	Mean quality score (range)	Mean sample size (range)	Mean AUC (range)	No. of studies with AUC \geq .70 Or correlation coefficient $r > 0.5$ (strong)
BVC	4	19.25 (18-20)	214 (70-530)	.83 (.77 - .91) *	3**
DASA-IV	5	21 (20-23)	144 (20-530)	.78 (.65 - .973)	4
DRS	1	19	37	.85	1
HCR-20 (total)	3	19.3(19-20)	47.6 (37-66)	.81 (.72-.91)***	3 ($r=.55$, so included here)
-historical scale	4	18.75 (17-20)	33.5 (37-94)	.61 (.54 - .67)	0
-clinical scale	7	19 (17-20)	387 (37-100)	.27 (.63 - .89) ****	3
-risk scale	3	19.3 (19-20)	47.6 (37-66)	.82 (.73 - .91) *****	2
-clinical + risk scale	1	19	37	.93	1
HoNOS-secure	1	19	37	.99	1
Imminent Risk Rating Scale	1	16	121	.74	1
LSI- R:SV	1	20	66	.57	0
MHOAT- Risk	1	19	37	.99	1
PCL-R	2	19.5 (19-20)	51.5 (37-66)	.68 (.67 - .69)	0
Facet 1	1	20	66	.47	0
Facet 2	1	20	66	.66	0
Facet 3	1	20	66	.68	0
Facet 4	1	20	66	.63	0
START (total)	3	20 (19-21)	51 (37-66)	.83 (.74 - 1.00)	3
START Strength total score	1	21	50	.71	1
VRAG	1	20	66	.53	0

*[only 3/4 studies included as AUC not present in one] **[only 3/4 studies included as AUC not present in one, and no correlation available] ***[only 2/3 studies included as AUC not present in one] ****[only 6/7 studies included as AUC not present in one] *****[only 2/3 studies included as AUC not present in one].

Table 4. Table presenting quality assessment scores for each included study

Study	Selection bias (out of 6)		Measurement bias (out of 14)		Attrition bias (out of 2)		Reporting bias (out of 8)		Clinical judgement (out of 2)		Overall score (out of 32)	
	Total	Unclear	Total	Unclear	Total	Unclear	Total	Unclear	Total	Unclear	Total	Unclear
Chan & Chow, 2014	4	0	10	2	0	1	5	0	1	0	20	3
Chu, Thomas, Ogloff & Daffern, 2013	4	0	9	2	0	1	5	1	2	0	20	4
Chu, Daffern & Ogloff, 2013	4	0	9	2	0	0	5	1	2	0	20	3
Chu, Thomas, Ogloff, & Daffern, 2011	4	0	10	1	0	0	5	1	2	0	21	2
Daffern & Howells, 2007	4	0	10	2	0	1	5	0	1	0	20	3
Finch, Gilligan, Halpin, & Valentine, 2017	4	0	8	3	0	0	5	1	2	0	19	4
Hvidhjelm, Sestoft, Skovgaard & Bue Bjorner, 2014	4	0	10	2	0	1	4	1	1	0	19	4
Maguire et al., 2017	6	0	10	2	0	1	5	1	2	0	23	4
McKenzie & Curr, 2005	4	0	8	1	0	1	4	1	1	0	17	32
Ogloff & Daffern, 2006	4	0	8	3	0	1	4	1	2	0	18	5
Starzomski & Wilson, 2015	3	0	6	2	0	0	5	1	2	0	16	3
Vane-Tempest, 2000	5	0	9	2	0	1	4	1	1	0	19	4
Vojt, Thomson, & Marshall, 2010	5	0	9	2	0	1	6	0	2	0	22	3

4. Discussion

4.1. General findings

This systematic review was undertaken to investigate the predictive validity of existing risk assessment instruments in the context of imminent, short-term violence and aggression within forensic psychiatric inpatient settings. The review was undertaken primarily to help guide clinicians in selecting the most predictive and appropriate tools to aid their assessment, formulation and management of inpatient, day-to-day violence and aggression in forensic psychiatric settings. Additionally, it could also inform researchers when selecting imminent violence risk measures. Studies within the review identified 11 risk assessment tools altogether, alongside 9 subscales taken from 3 of these 11 full risk assessment tools.

Findings appeared to illustrate good predictive validity for a number of tools for the prediction of imminent and short-term violence and aggression with forensic psychiatric inpatients. Some tools were evaluated more, appearing in more than one study; the most commonly evaluated (full) tools were the DASA-IV, followed by the BVC and then the START. This may indicate that over time, these tools have been more robustly tested and evaluated for use within inpatient short-term, imminent violence and aggression, and it may correlate to how widely used they are in clinical practice currently. Of the full tools included within the studies, the HoNOS-secure, MHOAT- Risk, BVC, DRS, HCR-20 (full) and the START were the most accurate in terms of predicting imminent violence. However notably, many of these well performing tools were only evaluated in one study and with small sample sizes. The tool with the highest mean quality score and a mean AUC above cutoff was the DASA-IV; so, we can perhaps be more certain of this tool's predictive ability. The poor predictive accuracy of the VRAG here is juxtaposed to past empirical work with forensic males looking at longer-term risk (Glover, Nicholson, Hemmati, Bernfeld, & Quinsey, 2002), and forensic psychiatric patients again looking at longer-term risk (Snowden, Gray, Taylor, & MacCulloch, 2007). Additionally, the PCL-R also performed poorly compared to previous studies looking at longer-term risk (Wormith, Olver, Stevenson, & Girard, 2007). These findings perhaps suggest that these

tools are indeed better placed to assess and contribute to the management of longer-term violence and aggression.

Upon closer inspection, there appears to be some questionability in predictive validity when considering the time period in which violence is being monitored (e.g. over 24 hours, a week, two weeks or a month). For instance, the Imminent Risk Rating Scale demonstrated how its predictive validity was initially good for predicting risk of violence within one week, the study then went on to review this weekly, for a total of 4 weeks, indicating how the overall AUC value decreased by the fourth week (week 1 AUC = .74; week 4 AUC = .57). This suggests that even within the month timeframe used within this study, predictive validity may vary. This presents some difficulties, as many tools were not investigated across all time periods; 24 hours, 1 week, 2 weeks, 3 weeks and 4 weeks. The full-scale HCR-20 demonstrated very high predictive validity for predicting violence within 1 month, but no studies investigated its ability within a lesser time-period, it may therefore be questionable to compare it to a tool assessing risk over a 24-hour period, such as the DASA-IV. Within the included studies and the wider literature, there is a lack of a clear definition of what constitutes short-term or imminent violence. There is no standardization as to what short-term violence is which means this can vary greatly across studies where authors must pick their own definition from varying existing ones. This makes it difficult to be clear and confident that the tools are in fact measuring the same thing and makes it challenging to compare them.

Confidence intervals were not reported in all of the included studies. Where provided though, the widths of the confidence intervals did not give confidence with respect to AUC estimates obtained in studies which were above the recommended thresholds (Warner, 2008). However, confidence intervals can be affected by sample size; smaller sample sizes tend to have wider confidence intervals. For the majority of included studies, sample sizes were relatively small, the range across all 13 studies was $n=20 - n=530$, but when excluding the largest sample size, the range drastically reduces to $n=20 - n=156$. Moreover, Chan and Chow's (2014) study had the largest sample size ($n=530$) within the

present review, and also one of the narrowest confidence intervals. This indicates how sample size must be taken into account when drawing conclusions and generalizations from the present review (Faber & Fonseca, 2014). Regarding sampling quality; whilst efforts were made in most studies to recruit or observe full, operational wards or units, only one study sample was randomly selected. This undoubtedly somewhat effects the ability of the other studies to be truly representative of the target population (Warner, 2008).

Unlike in other recent reviews of risk assessment tools and predictive validity (e.g. Geraghty & Woodhams, 2015), in the present review, there does not seem to be a clear difference in predictive validity between SCJ and actuarial tools; some of each performed well, and some of each less well. This highlights the importance of investigating risk assessment tools across different populations, situations and uses (e.g. long-term and short-term etc.) in order to ensure we are not making false assumptions based on other conclusions.

4.2. Strengths and limitations

The current review offers a novel contribution to the existing literature assessing predictive validity in forensic risk assessment by evaluating available research on the predictive validity of risk assessment tools for imminent, short-term violence and aggression within forensic psychiatric settings. An additional strength of the present review is that it is comprehensive in its incorporation of a quality assessment of the included studies. This approach was in-line with Geraghty and Woodham's (2015) who noted that previous existing work in the area of risk assessment often neglected to quality assess the literature when investigating predictive validity of risk assessment tools.

The review was inclusive (Egger, Dickersin, & Smith, 2008) by following an exhaustive search strategy as outlined in the method section of this review; involving database searches, grey literature searches, hand searches of reference lists and search engines. A negative of the current review was the inability to include non-English language articles

due to time and translation restrictions. However, some reviews have indicated that this exclusion in fact has limited effects in reviews (Jüni, Holenstein, Sterne, Bartlett, & Egger, 2002). Whilst this is so, (Song et al., 2010) warn that it may increase systematic bias.

4.3 Implications for clinical practice and future research

Despite its limitations, this review is a vital step in contributing to the literature on demonstrating the value of risk assessment tools for the assessment of imminent, short-term inpatient violence and aggression in forensic psychiatric inpatient settings. To the author's knowledge no systematic reviews have been conducted or published specifically investigating short-term risk assessment in this population and setting. This review may help clinicians and researchers select risk assessment tools for the prediction of imminent and short-term inpatient violence and aggression.

There is an argument for developing research further in this area as this initial review demonstrates strong and good predictive validity for a number of specialized imminent risk assessment tools. These tools are often shorter than traditional risk assessment tools and therefore may hold more clinical utility in busy ward environments.

Whilst this review is an important contribution to the imminent risk assessment literature, it has solely focused on predictive validity, neglecting both content validity (Davidson & Chesney-Lind, 2009) and predictive reliability (Zhou et al., 2016). Future work should aim to address these gaps in order to build a more comprehensive understanding of imminent risk assessment tools within this population and setting. This is a necessity in order to determine the worth of any tool (Geraghty & Woodhams, 2015; Warner, 2008). On top of this, further studies using improved sampling methods (e.g. randomized) and larger sample sizes may increase the certainty of these preliminary findings, as well as improving the reliability and representativeness of findings.

Moreover, as most of the studies measuring imminent violence in forensic psychiatric populations did not conceptualize or define 'short-term' or 'imminent' clearly, further

work could also aim to investigate constructs of imminent and short-term risk. The current review has indicated that there may not be a clear definition of what imminent risk is and is not. This makes it difficult for researchers and clinicians alike to pick the most appropriate tool for their need. Additionally, it makes it difficult to be certain that the tools are in fact measuring the same thing.

5. Conclusions

We regard this study as an important contribution to the practice of violence risk assessment. Whilst a large number of risk assessment tools exist to assist in the prediction and management of violence and aggression, little work has been done to consider the predictive validity and utility of these tools in the prediction, assessment and management of short-term and imminent ward-based violence. Our findings suggest that we can be most confident in the predictive validity of the DASA-IV due to its good mean AUC estimate and the relatively high mean quality rating score for the studies investigating it. However, presently, the evidence base in this area is very limited, with many tools having only been investigated in one single study within a forensic psychiatric setting, additionally, sample sizes appear generally to be small. Therefore, the current study highlights a need for further investigation into tools which appear to have very good AUC estimates for short-term risk of violence but would benefit from further research to validate these findings with larger sample sizes. The assessment of imminent and short-term violence risk in this setting is important due to the high propensity for violence, and the evidence of negative outcomes for staff, patients and organizations in relation to experiencing violence and aggression in healthcare settings. Therefore, the development of a more comprehensive evidence base around short-term, imminent risk assessment tools is considered a vital requirement in order to aid clinicians in the early detection of potential ward-based risk, in order to implement appropriate management plans.

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Appendices

Appendix A: Example search strategy with search terms

SearchJournalsBooksMultimediaMy WorkspaceAmirsysMobile

My Projects | My Searches & Alerts | My eTocs

Permanent Searches

RunDeleteCopy

- Rename - Edit - Display - Email Jumpstart

Permanent Searches (top)

25_10_17 Rowena_updated

after_Rowena_removed_hospital_and_unit

1. (violent* or agress* or assault* or threat* or attack* or abus* or recidivism or "re-offend*" or "repeat offend*").mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, fx, nm, kf, px, rx, ui, sy, tc, id, tm]

2. (immediat* or "short term" or "day to day" or "ward based" or imminent or brief or week* or month* or short*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, fx, nm, kf, px, rx, ui, sy, tc, id, tm]

3. (inpatient* or ward or "high secur*" or "low secur*" or "medium secur*" or psychiatr* or forensic*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, fx, nm, kf, px, rx, ui, sy, tc, id, tm]

4. ("clinical judgement" or DRAMS or START* or "structured risk assessment" or "personality assessment inventory" or "the crisis monitor" or "social dysfunction and aggression scale" or "risk scale" or "Kennedy Axis V" or "Brosset Violence Checklist" or BVC* or HCR* or DASA* or IRRS or "imminent risk rating scale" or "dynamic appraisal of situational aggression").mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, fx, nm, kf, px, rx, ui, sy, tc, id, tm]

5. 1 and 2 and 3 and 4

6. remove duplicates from 5

Appendix B: Studies excluded from full text with reasons

Summary table: Studies excluded from full text (n=192)

Reason	Number excluded
Incorrect outcomes for present systematic review	9
No violence risk tool used	22
Not short-term risk as defined within the current study	65
Not forensic psychiatric population	62
Editorials & non-empirical studies	29
Document unavailable	1
Not in English	3
Self-harm or suicide; not violence to others	1

Incorrect Outcomes for Present Systematic Review (n=9)

- Braham, L., Jones, D., & Hollin, C. R. (2008). The Violent Offender Treatment Program (VOTP): Development of a treatment program for violent patients in a high security psychiatric hospital. *The International Journal of Forensic Mental Health*, 7(2), 157-172. doi:<http://dx.doi.org/10.1080/14999013.2008.9914412>
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No violence risk tool used (n=22)

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Appendix C: Blank quality assessment table

Assessment of quality (only score for relevant items)	Guidance for scoring each sub- section	Overall rating of quality
A) Selection Bias		Total: /6 Unclear: /3
Q1 Were the study objectives clear? a) Yes b) Partially c) No d) Unsure		Yes=2 Partially=1 No=0 Unsure=unclear
Q2 Were the participants recruited in an acceptable way? a) Yes b) Partially c) No d) Unsure	Yes=participants were appropriately selected, recruitment process described, and ethical principles adhered to (i.e., male and female forensic psychiatric inpatients, was vulnerability of the population considered) Partially=meet some of the expectations of the sample, unclear recruitment process No=no recruitment process not described Unsure=lack of description to make comprehensive judgement	Yes=2 Partially=1 No=0 Unsure=unclear
Q3 Are the individuals selected to participate in the study likely to be representative of the target population? a) Very likely b) Somewhat likely c) Not likely d) Unsure	Very likely=randomly selected from forensic psychiatric inpatient population Somewhat likely=they are referred from a source list in a systematic manner e.g., clinic, prison, mental health facility Not likely=if they are self-referred Can't tell =if participants characteristics not appropriately described	Very likely=2 Somewhat Likely=1 Not likely=0 Unsure=unclear
B) Measurement Bias		Total: /14 Unclear: /7

<p>Q1 Was the operational definition of outcome clearly stated?</p> <p>a) Yes b) Partially c) No d) Unsure</p>	<p>Yes = clear definition of violence (eg., verbal, physical) underpinned by strong rationale/theory</p> <p>Partially = violence used as outcome but not clearly defined</p> <p>No = no clear definition or rationale for violence</p> <p>Unsure – not described</p>	<p>Yes=2 Partially=1 No=0 Unsure=unclear</p>
<p>Q2 Were the methods for obtaining the outcome clearly described?</p> <p>a) Yes b) Partially c) No d) Unsure</p>	<p>Yes = reliable system for sourcing data described e.g.: violence recorded in hospital records</p> <p>Partially = sources mentioned but methods on how they were obtained not adequately described or methods but no sources identified</p> <p>No = no system to measure outcome established</p> <p>Unsure = authors do not report establishing any system but the method/results suggest they may have</p>	<p>Yes=2 Partially=1 No=0 Unsure=unclear</p>
<p>Q3 Was the outcome measured in the same way across all participants?</p> <p>a) Yes b) Partially c) No d) Unsure</p>	<p>Yes = violence measured in the same way for all participants</p> <p>No = outcome not measured in same way for all participants</p> <p>Unsure = measurement of outcome for participants not adequately described</p>	<p>Yes=2 No=0 Unsure=unclear</p>
<p>Q4 Was the risk assessment tool administered by trained professionals?</p> <p>a) Yes b) Partially c) No d) Unsure</p>	<p>Yes = trained professionals (psychologists or others trained to administer the tool and/or trainees/researchers under supervision)</p> <p>Partially = research assistants/trainees with no experience or supervision</p> <p>No = no professional was trained to administer the tool</p>	<p>Yes=2 Partially=1 No=0 Unsure = unclear</p>

	Unsure = not adequately described	
Q5 Did the authors use multiple sources of information to score risk assessments? a) Yes b) Partially c) No d) Unsure	Yes = multiple sources of information used (file info, interviews, psychometrics, Partially = more than one source used but not all potential sources (e.g., file info+ interview but not psychometric or hospital records) No = only one source of information used Unsure = not adequately described	Yes=2 Partially=1 No=0 Unsure = unclear
Q6 Was the follow-up period sufficiently described & reported? a) Yes b) Partially c) No	Yes = follow-up period described and reported Partially = follow-up period described or follow-up period reported No = no follow-up period described or reported	Yes=2 Partially=1 No=0 Unsure = unclear
Q7 Was missing data dealt with appropriately? a) Yes b) Partially c) No d) Unsure e) N/A	Yes = missing data (if any) was reported and taken into account for risk assessment tool (i.e., not included in analyses or adjustments made) Partially = missing data was reported but not taken into consideration in measuring risk No = missing data was not dealt with at all Unsure = not sufficiently described, study did not report whether there was any missing data Not applicable = the study did not have any missing data and reported this	Yes=2 Partially=1 No=0 Unsure=unclear N/A=N/A
C) Attrition Bias		Total: /2 Unclear: /1
Q1 Were drop-out rates recorded on the studies? a) Yes	Yes = Drop-out rates recorded & stage of drop-out recorded or not relevant to study	Yes or N/A=2 Partially=1 No=0 Unsure=unclear

b) Partially c) No d) Unsure e) N/A	Partially = Drop-out rate reported but stage of drop-out not No = drop-out rate not recorded Unsure = not sufficiently described	
D) Reporting Bias		Total: /8 Unclear: /4
Q1 Were appropriate statistical tests used for the research design and question? a) Yes b) Partially c) No d) Unsure	Was the quantitative analysis appropriate for the research? (ROC/AUC statistics, correlations, multivariate statistics e.g., regressions)	Yes=2 Partially=1 No=0 Unsure=unclear
Q2 Was the predictive validity of the tests reported (e.g., ROC analyses, incidents of violence) a) Yes b) Partially c) No d) Unsure	Yes = ROC/AUC analyses or DOC, NPV or PPV or correlations reported for incidents of violence using above analyses and range reported i.e., (CIs, SE) Partially = other statistics used to report violent incidences, not reported or correlations only reported or AUC etc. estimates but no range reported (i.e., CI or SE) No = rates of violent acts recorded Unsure = not adequately described	Yes=2 Partially=1 No=0 Unsure=unclear
Q3 Were potential confounders taken into account? a) Yes b) Partially c) No d) Unsure	Yes = any or most of potential confounders were taken into consideration Partially = Some efforts made to control for confounders No = no effort made to control for potential confounders Unsure = not enough information given	Yes=2 Partially=1 No=0 Unsure=unclear
Q4 Can the results be generalised to other forensic populations? a) Yes	Can violence be predicted in other forensic psychiatric populations? Consider age, ethnicity, offender type etc.	Yes=2 Partially=1 No=0 Unsure=unclear

b) Partially c) No d) Unsure		
E. Clinical judgement/ pragmatism		Total: /2 Unclear: /1
Q1 Is the study worth continuing? a) Yes b) Maybe c) No d) Unsure	Based on the overall study does the study have credibility? Do you believe the results? Is the design of the study sufficiently flawed to render the results unreliable? Also consider Pragmatism: are there any benefits to research and practitioners to continuing studies of this nature?	Yes=2 Maybe=1 No=0 Unsure=unclear
<i>Quality score: /32</i> <i>Unclear: /16</i>		

Appendix D: Table of full quality assessment and scores for each study

Assessment of quality (only score for relevant items)	Chan & Chow, 2014	Chu, Thomas, Ogloff & Daffern, 2013	Chu, Daffern & Ogloff, 2013	Chu, Thomas, Ogloff, & Daffern, 2011	Daffern & Howells, 2007	Finch et al., 2017	Hvidhjelm, et al., 2014	Maguire et al., 2017	McKenzie & Curr, 2005	Ogloff & Daffern, 2006	Starzomski & Wilson, 2015	Vane-Tempest, 2000	Vojt, Thomson, & Marshall, 2010
A) Selection Bias	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 6/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 4/6 Unclear: 0/3	Total: 3/6 Unclear: 0/3	Total: 5/6 Unclear: 0/3	Total: 5/6 Unclear: 0/3
Q1 Were the study objectives clear?	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Partially =1	Yes=2	Partially=1
Q2 Were the participants recruited in an acceptable way?	Partially =1	Partially =1	Partially =1	Partially =1	Partially =1	Partially=1	Partially=1	Yes=2	Partially =1	Partially =1	Partially =1	Yes=2	Yes =2
Q3 Are the individuals selected to participate in the study likely to be representative of the target population?	Somewh at Likely=1	Somewh at Likely=1	Somewh at Likely=1	Somewh at Likely=1	Somewh at Likely=1	Somewhat Likely=1	Somewhat Likely=1	Very likely=2	Somewh at Likely=1	Somewh at Likely=1	Somewh at Likely=1	Somewh at Likely=1	Very likely=2
B) Measurement Bias	Total: 10/14 Unclear: 2/7	Total: 9/14 Unclear: 2/7	Total: 9/14 Unclear: 2/7	Total: 10/14 Unclear: 1/7	Total: 10/14 Unclear: 2/7	Total: 8/14 Unclear: 3/7	Total: 10/14 Unclear: 2/7	Total: 10/14 Unclear: 2/7	Total: 8/14 Unclear: 1/7	Total: 8/14 Unclear: 3/7	Total: 6/14 Unclear: 2/7	Total: 9/14 Unclear: 2/7	Total: 9/14 Unclear: 2/7

Q1 Was the operational definition of outcome clearly stated?	Yes=2	Partially =1	Yes=2	Yes=2	Yes = 2	Yes=2	Yes=2	Yes=2	Partially =1	Yes=2	Yes=2	Partially =1	Yes=2
Q2 Were the methods for obtaining the outcome clearly described?	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Partially =1	Yes=2	Yes=2	Yes=2	Yes=2
Q3 Was the outcome measured in the same way across all participants?	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Unsure= unclear	No=0	Yes=2	Yes=2
Q4 Was the risk assessment tool administered by trained professionals?	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Unsure = unclear	Yes=2	Yes=2	Partially =1	Yes=2	Partially =1	Unsure = unclear	Yes=2
Q5 Did the authors use multiple sources of information to score risk assessments?	unclear	Unsure = unclear	unclear	No=0	Unsure = unclear	Unsure = unclear	Unsure = unclear	Unsure = unclear	Partially =1	Unsure = unclear	Unsure = unclear	Unsure = unclear	Unsure = unclear
Q6 Was the follow-up period sufficiently described & reported?	Yes=2	Yes=2	Partially =1	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Partially =1	Yes=2	Partially=1

Q7 Was missing data dealt with appropriately?	unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Yes=2	Unsure=unclear
C) Attrition Bias	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 0/1	Total: 0/2 Unclear: 0/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 0/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 0/1	Total: 0/2 Unclear: 1/1	Total: 0/2 Unclear: 1/1
Q1 Were drop-out rates recorded on the studies?	unclear	Unsure=unclear	No=0	No=0	Unsure=unclear	No=0	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	No=0	Unsure=unclear	Unsure=unclear
D) Reporting Bias	Total: 5/8 Unclear: 0/4	Total: 5/8 Unclear: 1/4	Total: 5/8 Unclear: 1/4	Total: 5/8 Unclear: 1/4	Total: 5/8 Unclear: 0/4	Total: 5/8 Unclear: 1/4	Total: 4/8 Unclear: 1/4	Total: 5/8 Unclear: 1/4	Total: 4/8 Unclear: 1/4	Total: 4/8 Unclear: 1/4	Total: 5/8 Unclear: 1/4	Total: 4/8 Unclear: 1/4	Total: 6/8 Unclear: 0/4
Q1 Were appropriate statistical tests used for the research design and question?	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2	Yes=2
Q2 Was the predictive validity of the tests reported (e.g., ROC analyses, incidents of violence)	Partially=1	Yes=2	Yes=2	Yes=2	Partially=1	Yes=2	Partially=1	Yes=2	Partially=1	Partially=1	Yes=2	Partially=1	Yes=2

Q3 Were potential confounders taken into account?	Partially=1	Unsure=unclear	unclear	Unsure=unclear	Partially=1	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unsure=unclear	Unclear=unclear	Unsure=unclear	Unsure=unclear	Partially=1
Q4 Can the results be generalized to other forensic populations?	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1	Partially=1
<i>E. Clinical judgement/pragmatism</i>	Total: 1/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 1/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 1/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 1/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1	Total: 1/2 Unclear: 0/1	Total: 2/2 Unclear: 0/1
Q1 Is the study worth continuing?	Maybe=1	Yes=2	Yes=2	Yes=2	Maybe=1	Yes=2	Maybe=1	Yes=2	Maybe=1	Yes=2	Yes=2	Maybe=1	Yes=2
<i>Quality score: /32 Unclear: /16</i>	20/32 3/16	20/32 4/16	20/32 3/16	21/32 2/16	20/32 3/16	19/32 4/16	19/32 4/16	23/32 4/16	17/32 3/16	18/32 5/16	16/32 3/16	19/32 4/16	22/32 3/16

Appendix E: Guidance for publication in Aggression and Violent Behavior

GUIDE FOR AUTHORS

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**An exploration into how forensic mental health nurses’
experience patient perpetrated violence and aggression in a
high-security setting: prediction, support and emotional coping**

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As prepared for The International Journal of Forensic Mental Health (see Appendix A)

8,449 words

Abstract

Patient perpetrated violence and aggression (PPVA) is common in healthcare settings, with mental health and forensic mental health nurses at the highest risk of experiencing such violence. It is correlated with negative sequelae for staff, patients and the organization (e.g. difficulty retaining staff). Research to date has focused on measuring these negative outcomes, the prevalence of PPVA and on reviewing the predictive validity of available risk assessment tools. However, research is lacking in forensic psychiatric settings and more generally, there is little understanding of how nursing staff actually make day-to-day risk predictions, and subsequently, their experiences of support and emotional coping following PPVA.

This study utilized a constructivist grounded theory approach to analyze interview transcripts from 12 frontline nurses in a high-security forensic psychiatric setting. A model was developed from the analysis that integrated nurses' beliefs and assumptions about subtypes of violence, their attempts to use various observation skills in order to aid risk prediction, and their consequential emotional experiences following a violent incident.

Emotional coping appeared to be greatly impacted by various factors related to the culture of the organization and the availability of support. Getting to know the patient helped staff identify underlying needs driving violent behavior. This allowed nurses to implement interventions to address these unmet needs, and so reduce recurrent and cyclical violence. Recommendations are made to build upon, and utilize nursing skills in risk prediction and management, and to help better support the emotional impact of experiencing PPVA within forensic psychiatric settings.

Keywords: Forensic, Violence, Risk, Nurses, Coping, Prediction

Background

Patient perpetrated violence and aggression (PPVA) is rife within healthcare settings (Coffey, 1999; Coffey & Coleman, 2001; Ettorre & Pellicani, 2017; Itzhaki et al., 2015; Jenkins & Elliott, 2004; Sullivan, 1993), and has been recognized as a public health concern (Canadian Federation of Nurses Unions, 2018; Hesketh et al., 2003). Patient violence and aggression are estimated to cost the UK's National Health Service (NHS) between £60 to £69 million annually (Bellis, Hughes, Perkins, & Bennett, 2012; National Institute for Health and Clinical Excellence, [NICE] 2015a). Rates of PPVA appear to be growing, especially within psychiatric settings (Gignon et al., 2014; Koukia, Mangoulia, Gonis, & Katostaras, 2013; UNISON Scotland, 2014) but there is no definite causative understanding to explain this increase across health services (Smith, 2012).

Within the UK annually, roughly 75% of NHS staff experience PPVA (NICE, 2015a), moreover NHS figures indicate that PPVA increased by over 5000 incidents in just one year (Merrifield, 2014) with nearly 70% of these incidents occurring in psychiatric settings. Having a diagnosis of schizophrenia, a history of alcohol or substance misuse, a history of PPVA and possessing a hostile-dominant interpersonal style have been identified as strong predictors of PPVA (Ettorre & Pellicani, 2017). These features often present for patients in forensic psychiatric settings (Martin, Driscoll, & Samuels, 2008; Hodgins, Piatosa, & Schiffer, 2014; Steele, Darjee, & Thomson, 2003) and as such, it is perhaps unsurprising that inpatient *forensic* psychiatric settings are seen as having some of the highest rates of PPVA (Bowers et al., 2011). However, these settings have been somewhat neglected in research. While there is a vast literature demonstrating the relationship between PPVA and staff outcomes in general mental health wards, there is little focussing on secure forensic hospitals. Existing literature in the area of forensic psychiatric PPVA, tends to focus on the assessment and management of longer-term risk; especially on levels of risk on wards using standardised risk assessment tools such as the Historical Clinical Risk Management-20 Version 3 (HCR-20V3; Strub, Douglas, & Nicholls, 2014) and contributors to violent and aggressive patient behavior (Ros, Van der Helm, Wissink, Stams, &

Schaftenaar, 2013). This fails to identify nurses' experiences of the day-to-day management and prediction of ward-based PPVA.

Violence and staff wellbeing

Nursing can be an emotionally demanding profession; 44% of mental health nurses demonstrate psychiatric distress at clinical levels (Edwards & Burnard, 2003), and although causes of distress do vary, PPVA has consistently been identified as a key causal factor (Lee et al., 2015). When compared to other clinicians, mental health nurses have been shown to be the most likely to experience PPVA physically, verbally and sexually (Itzhaki et al., 2015; Shiao et al., 2010), with reporting rates varying from 25% to 80% (Stevenson, Jack, O'Mara, & LeGris, 2015). This variance in reporting is likely to reflect the problem of underreporting, with findings suggesting that only 30% of assaults experienced are ever actually reported (Jacobowitz, 2013). As such, true incident rates are likely even higher. Nurses staffing forensic psychiatric wards may be at a heightened risk of experiencing PPVA on a day-to-day basis due to the propensity of violence and aggression within this population (Fluttert, van Meijel, Nijman, Bjorkly, & Grypdonck, 2010).

Experiencing PPVA is strongly correlated with numerous negative outcomes for healthcare staff; difficult emotions such as an increase in anxiety and anger (Nau, Dassen, Halfens, & Needham, 2007), guilt and shame (Jacobowitz, 2013; Lee et al., 2015), and reduced self-esteem (Baby, Glue & Carlyle, 2014). Additionally, as many as 10% of those subjected to PPVA go on to meet the diagnostic criteria for post-traumatic stress disorder (Jacobowitz, 2013). From an organizational perspective, violence and aggression have also been correlated with high staff turnover, psychological burnout and difficulty retaining staff (Viotti, Gilardi, Guglielmetti, & Converso, 2015). Also linked are; reduced staff morale, increased absenteeism, reduced job satisfaction and reduced quality of patient care (Stevenson et al., 2012). Ultimately, increases in sick-leave and staff absence due to disability and stress, also increase costs for the NHS (Bellis et al., 2008).

Managing violence and aggression

NICE (2015b) guidelines make numerous recommendations to aid the management of patient PPVA. Apart from psychotropic medication to manage violence, the quality of the staff/patient relationship is recognized as paramount, as well as the ability of both staff and patients to identify early warning signs of aggression. However, the recommendations warn against leading with the use of physical restraint and urge that this is utilized as a last resort once prevention and de-escalation have been exhausted (NICE, 2015a). That said, this remains a common approach; one service evaluation from a UK high-security hospital demonstrated that within a year, over half of the violent and aggressive incidents recorded were managed through restraint and breakaway; even though 40% of these were originally categorized as ‘moderate’ in severity, with only 15% as ‘serious’ (Pulsford et al., 2013).

Both restraint and seclusion have been shown to affect the success of psychological therapy in the short-term, as both can lead to increased violence and aggression initially (Fluttert et al., 2010; Newton-Howes, 2013). This is thought to be related to ruptures in the therapeutic alliance caused by violent or aggressive interactions (Fluttert et al., 2008; Fluttert et al., 2010; Zugai, Stein-Parbury, & Roche, 2015). Research has demonstrated the importance of a strong and trusting therapeutic alliance for aiding the processes of engagement and treatment cooperation with high-risk offenders who demonstrate personality disorder (Livesley, 2007). This can lead to a dilemma for nursing staff; how to balance ‘security versus therapy’, ‘dangerousness’ and the ‘management of violence’ (Mason et al., 2009).

Coping and staff support

There are four high-security, and multiple medium and low-security hospitals in the UK (Green, McIntosh, & Barr, 2008), meaning there are many nurses working with patients with a high propensity for violence and aggression. Evidence demonstrating negative outcomes from experiencing PPVA supports the need for mechanisms to be put in place to support staff who are likely to be exposed to it, and this is supported by

national guidelines (NICE, 2015b). Within forensic psychiatric hospitals some support mechanisms do exist for staff including informal peer support, line-management support, clinical supervision, debrief, and occupational health. However, research has indicated that we know little about what actually works in supporting staff who experience PPVA; for instance the implementation of stress management courses for staff resulted in poor attendance and negative effects (Coffey, 1999). Ultimately, there is little guidance on what should be available to help support staff, and as such there may be no consistent or standardised approach. This may result in some staff receiving no or inadequate support, which may be related to the lack of clarity about procedures or the availability of support, or a reluctance to request it (Jacobowitz, 2013). Moreover, a study investigating nurses experiences of a debriefing process within a high-security hospital indicated that individuals felt the process provided adequate space to document the practicalities of what happened but gave limited opportunity to explore their feelings or discuss coping (McCafferty, 2016). This could mean that staff suffering from psychological trauma or distress may go unnoticed which could lead to feelings of anger, anxiety, stress and depression (Needham, Abderhalden, Halfens, Fischer, & Dassen, 2005).

Prediction, assessment and management of violence and aggression

Whilst the development of staff support is vital, literature suggests that the prevention of PPVA should be of primary concern (Luck et al., 2009). Standardised risk assessment tools are often used to try and assess and manage risk and as such have received much empirical attention. Over the years, the development of risk assessment tools has seen a movement away from solely relying on unstructured professional judgement, toward structured professional judgement (SJP) tools (Geraghty & Woodhams, 2015) which incorporate both current clinical factors and clinically informed judgements (Hart, 1998), and also feature both dynamic and static risk factors (e.g. the HCR-20). In doing so, SJP tools aim to assess the future, or long-term risk of an individual to help inform clinical decisions, including readiness for transfer to conditions of lesser security and, ultimately, discharge. Typically, research on the assessment of violence and aggression has focused on evaluating these tools

(Bjorkdahl, Olsson, & Palmstierna, 2006; Doyle & Dolan, 2002; Fluttert et al., 2010). The prediction and assessment of ward-based, more imminent violence has proven less accurate than for risk of longer-term recidivism when using the same risk data (Amore et al., 2008; O'Shea & Dickens, 2015). As Trenoweth (2003) noted over 10 years ago, there is still extremely limited research into the assessment and prediction of risk made by those who are confronted with actual or potential violent behavior in the present.

Often behavioral cues can indicate escalating aggression (Fluttert et al., 2010) allowing nurses to intervene and deescalate the situation, so reducing the potential for violence (Davies, Griffiths, Liddiard, Lowe, & Stead, 2015). As nurses provide around the clock care, research has demonstrated their skill in recognizing these early behavioral cues (Abderhalden et al., 2004; Fluttert et al., 2010; Hamilton & Manias, 2007; Nau, Dassen, Halfens, & Needham, 2007). However, to date the focus has been in physical (Roy, 2013) or general mental health settings (Sturrock, 2012) and has tended to take a quantitative approach (Marlasca, 2014). To the authors knowledge, research has not yet specifically investigated how nurses from inpatient *forensic* psychiatric settings can recognize violence. This is integral as one of the main priorities within forensic psychiatric settings is for the staff team to assess risk of violence as accurately as possible, and to manage this for both staff and patient safety and wellbeing. Moreover, NICE (2015a) suggests that better recognition and prediction of ward-based violence may improve staff and patient wellbeing.

Present study

There is considerable research investigating work-based stress among community psychiatric and hospital nurses (Coffey 1999; Coffey & Coleman, 2001; Gignon et al., 2014; Itzhaki et al., 2015; Koukia et al., 2013; Roche, Diers, Duffield, & Catling-Paull, 2010). Comparatively, the experiences of nurses in forensic psychiatric settings have been somewhat neglected, particularly in recent years (Coffey, 1999; Oddie & Ousley, 2007; Ros, Van der Helm, Wissink, Stams, & Schaftenaar, 2013).

Whilst previous research has provided an understanding of risk assessment instruments, and the levels of risk in wards, there is a failure to understand the nuances

and lived experience of staff working day-to-day with patients. Although this has been highlighted as an area in need of empirical development (Coffey, 1999; Oddie & Ousley, 2007) research has failed to investigate this sufficiently. Whilst it has been discovered that stress management groups were unhelpful for staff (Coffey, 1999) over the years since, few studies have attempted to advance this understanding. Furthermore, Itzhaki et al., (2015) suggest that it is not simply experiencing violence, but more so *how* an individual reacts to it that denotes whether negative outcomes will develop. To date, there is no clear explanation as to why nurses react in different ways, and to what they find most and least helpful following PPVA in these settings in order to promote greater resilience (Hallett, Huber, & Dickens, 2014).

The present study therefore aimed to address these gaps by exploring how forensic mental health nurses predict and emotionally cope with ward-based violence and aggression in a high-security setting, and the psychological processes impacting on these phenomena. It is hoped that the findings could both help to improve post-incident support for staff and help to better understand and improve the process of the prediction of ward-based PPVA.

Method

Design

A qualitative research design was employed to investigate the processes of predicting violence and aggression and of emotional coping for forensic mental health nurses. Qualitative design is recognised as appropriate for the exploration of poorly understood phenomena (Hedderman, Gunby, & Shelton, 2011) and to begin to understand processes and experiences (e.g. Foley & Timonen, 2015; Knott, Turnbull, Olver, & Winefield, 2012). As such it was deemed the most suitable approach for the present study. Semi-structured interviews were utilized with Charmaz's (2006) social constructivist approach to grounded theory for data analysis. Data collection continued until no new themes or data were emerging, in order to attain theoretical sufficiency (Glaser, 2013; Guest, Bunce, & Johnson, 2006). This approach allowed for

exploration into previously poorly understood phenomena (Hedderman, Gunby and Shelton, 2011), and in doing so allowed theory, and a provisional model of understanding, to be developed from participants' own views, experiences and opinions, rather than inferring what factors contributed to these phenomena (Charmaz, 2006; Willig, 2008).

Rigor and reflexivity

Using the social constructionist approach, the lead researcher (first author) was encouraged to acknowledge and consider the influence of her experience working in forensic mental health, her role as a trainee clinical psychologist, and her prior experience working therapeutically in various settings. As interviews progressed, completed interviews were transcribed and initial line-by-line coding began. Written memos were kept with initial thoughts and considerations and a reflexive diary helped the lead researcher to consider her role in the creation and development of data and themes. In-depth, focused-coding began after interview eight and continued until data collection and coding was complete. The eleventh and twelfth interviews were organized in order to further test out emerging themes and categories and to ensure no further new themes appeared to be emerging.

Participants

A range of professionals constitute multi-disciplinary teams within secure settings, many of whom have some degree of contact with patients. However, the current study was interested in experience of PPVA. As such, frontline qualified nurses and nursing assistants were selected as an appropriate sample, given their significant level of contact with patients and their responsibility for managing violence and aggression on the wards. Nursing staff have also been identified as the clinical professionals most likely to experience PPVA (Itzhaki et al., 2015; Shiao et al., 2010). A homogenous sample of frontline, ward-based nursing staff was purposefully selected using volunteer sampling, in line with the chosen methodology (see below). At the start of

each interview, demographic information was collected from each participant using a brief questionnaire designed for the present study (Appendix B). The questionnaire covered age, years of employment at the current organization, gender, and employment level. The sample consisted of 12 participants (5 males and 7 females); 8 qualified mental health nurses and 4 nursing assistants participated. Participants were aged between 26 and 58 years (mean age = 38years) and had been employed in their current role between 6 months and 34 years (mean time in role = 10 years 4 months). All participants spoke English fluently.

Semi-structured interview schedule

A semi-structured interview schedule (Appendix C), including open-ended prompts, was initially created for the purpose of the study and was used to begin early data collection. Whilst this schedule was developed, interviews were designed to respond to the participants answers, allowing for full exploration of personal experiences and attitudes. As data collection and analysis progressed, interview questions were developed and adapted in order to further 'test-out' emerging categories within existing data, keeping in-line with the constructionist approach to grounded theory (Charmaz, 2006). The initial schedule started with two questions aimed at engaging participants (e.g. *Can you tell me a little about your experience of being a nurse in a high secure setting?*) and then broadly covered experiences of aggression and violence at work on forensic psychiatric wards, experiences of prediction and recognition of violence and aggression, and emotional coping. Questions included: *Can you tell me about the last time you were present on the ward when there was a violent incident? What's it's like on the ward before a violent or aggressive incident happens? Can you explain how you think you manage or cope after experiencing a violent or aggressive incident on the ward?* The initial schedule was created in partnership with a member of the research team experienced in the use of grounded theory methodology. Interviews concluded by checking whether the researcher had missed anything important. This provided an opportunity to address any overlooked pathways and helped to ensure the interview ended on a more comfortable, less emotive topic.

Ethical considerations

The study was given ethical approval by The University of Edinburgh, School of Health in Social Science (Appendix D) and was also granted approval by the research committee of the NHS health board in which the study was completed (Appendix E). The study was developed following the British Psychological Society (2014) ethical standards and guidelines. All participants were provided with an information and consent form (Appendix F, G) which included information about participation being entirely voluntary, and the procedure to withdraw their data from the study at any time up until publication.

Procedure

The research took place at an all-male high-security NHS hospital in the UK. Qualified nurses and nursing assistants at the research site were provided with a copy of an information sheet and information about the study was also communicated via ward diaries, ward meetings and NHS-email. As such, all front-line nursing staff were informed about the study and had access to the information sheet; 12 agreed to participate. Semi-structured interviews were conducted in a quiet office located within the hospital. Interviews lasted between 48 and 75 minutes (average interview length was 60.5 minutes). Each interview was digitally recorded and transcribed by the first author. All potentially identifiable information was removed or altered during transcription to protect participant and patient anonymity.

Data Analysis

In accordance with Charmaz (2006), throughout the simultaneous processes of data collection and analysis, theoretical sampling was employed in order to refine emerging categories.

Initial analysis remained close to the data by employing line-by-line coding. This was completed for the first eight transcripts before focused coding was introduced. Focused coding then helped to synthesize the line-by-line codes, selecting and clustering the most significant and frequent of these to form the basis and beginnings of categories (Charmaz, 2006). As more data was collected and transcripts were coded and examined, support emerged for existing codes and the emergence of new codes were also evidenced. When a new code was discovered, previous data were re-examined to ascertain whether support for the new code was present. Reflective memos were written by the primary researcher throughout the process of data collection and analysis in order to identify gaps in understanding and to identify potential emerging categories. The constant comparative analysis of both codes and memos allowed for the development and adaptation of emerging categories and of the interview schedule in order to further develop and ‘test-out’ emerging categories. Focused codes were refined and theoretical sorting was utilized to arrive at a model that was judged to best fit the data. This model comprised of two overarching categories and three main categories, with two sub-themes which appeared to act as confounding factors within the model (see Table 1). Dedoose (2015) software and Microsoft Excel were used throughout to assist data management, retrieval and analysis.

Results

Across interviews, several theoretical categories were identified suggesting that violence PPVA was dichotomized into two distinct sub-types; ‘sudden’ and ‘build-up’. These sub-types appeared to determine staff’s ability to predict violence and subsequently cope with the experience. Knowing (and understanding) the patient was viewed as an integral part of nurses’ ability to predict and manage risk. Knowing the patient captured numerous skills that nurses used to identify risk escalation, such as: observation, listening, communicating as a team and recognizing changes in presentation. These skills focused on patient’s physical and bodily cues, including

behavior, appearance and vocalizations. Knowing the patient was deemed to be an overarching category within prediction, as it represented the context in which all other prediction processes could occur. Nurses consistently stated that without knowing the patient, it was nearly impossible to predict and understand changes in how patients ‘normally’ presented. By using these skills, nurses were able to identify triggers and key underlying needs driving the violent and aggressive behaviors, which in turn, allowed nursing staff to put in place needs-led care-plans and interventions to reduce the reoccurrence of similar PPVA. The two sub-types of violence also appeared to differently impact on nurses’ assumptions and attributions about the violence (e.g. “I’m to blame”, or “I was specifically targeted”) which in turn impacted on their emotional experience and outcomes from the violent incident (e.g. anxiety and trauma). However, it was also identified that certain modifying factors played a pivotal role in the process of coping for staff (e.g. organization culture and expectations).

Together, these categories and processes demonstrated one interpretation of forensic mental health nurses’ experiences of predicting and coping with ward-based violence and aggression. Categories and related themes are briefly presented in Table 1. These categories are further depicted with extracts taken from interview transcripts to illustrate this. Pseudonyms have been utilized throughout to maintain anonymity. Figure 1 then presents a diagrammatic representation of these concepts and illustrates the interplay between sub-types of violence, the predictive process and the psychological and organizational processes related to the process of coping.

Table 1. Categories and contributing codes

Level of analysis	Example contributing codes (grouped line by line and focused codes)
<i>Overarching categories</i>	
Violence and aggression dichotomized	Dividing into two types of violence; Experiencing sudden violence; Experiencing gradual violence; Recognizing different types of violence; Experiencing different emotions from different types of violence
Striving to know the patient	Working on building a relationship; Getting to know the patient; Learning what's normal for patients; Learning to recognize changes in behavior; Communicating as a team to learn about the patient; Observing to learn about the patient; Recognizing personal cues to violence; Learning through reflection
<i>Main Categories</i>	
Identifying underlying needs; a route away from violence and aggression	Attempting to understand triggers; appreciating underlying causes of aggression; Uncovering the underlying need; Meeting the need to reduce violence; Reflecting on past violence
Emotional impact and coping	Managing emotions towards the patient; Feeling on edge; Worrying about how you will be perceived; Working through difficult emotions; Putting the job first; Struggling with the return to work; Feeling de-valued; Dividing staff -a sense of 'them and us'.
Personal assumptions and beliefs	Feeling personally targeted; Blaming self for things going wrong; Questioning your own actions; Attributing violence to mental health
<i>Sub-themes (confounding factors)</i>	
Organizational culture and approach to support	Valuing a supportive approach; Supporting staff as vital in return to work; De-humanizing staff and ignoring wellbeing; Expectation to cope and put job first
Staffing issues and movement across wards	Not knowing enough; moving wards increasing risk; Staffing issues

Violence and aggression dichotomized

A key overarching category identified was that PPVA was divided into two distinct sub-types. All participants described differing behaviors and presentations between the two sub-categories and the majority of participants explained how the planned sub-category was harder to pre-determine or predict compared to the more gradual, build-up sub-type, and therefore came across as sudden in nature:

P10: The planned stuff is usually more explosive if you like, it just suddenly happens, zero to one-hundred sort of, erm, I think there's a lot less signs, it just happens... that [the unplanned] sort of tends to maybe simmer? It's like, more often than not you can see someone becoming more frustrated or aggravated

Furthermore, these sub-categories of PPVA appeared to be linked with the development of negative beliefs, assumptions and attributions about the incident; whereby planned sudden PPVA, and its perpetrators, were viewed more negatively (P6: *there is an element of planning and intent...I thought he's just an angry man who didn't get what he wanted*). Whilst build-up PPVA still appeared to cause difficult emotions, it seemed to be linked with a greater sense of understanding and compassion and elicited more of a caring response (P5: *I didn't see that as an assault because he's very unwell, crying...when he realised what he'd done and that pulls at your heart strings*). Additionally, there was a real sense of staff feeling distressed by when unable to predict planned violence:

P3: sometimes as difficult as it can be to accept, violence can just come from nowhere for no reason and just can't be stopped. And that's the erm, that's what's particularly difficult, I think when you are faced with things that are absolutely pre-planned and erm with the intent of doing maximum damage just because they can.

Ultimately, nurses seemed to experience two subtypes of violence; one that appeared sudden in terms of behavior, but which they attributed to being more planned and the other which appeared to build-up and was often attributed to mental health, perhaps being seen as more psychotically driven. This idea is explored further in the following themes.

Striving to know the patient

This overarching category was based on the nurses' attitude towards PPVA prediction, whereby it seemed that all participants based their ability to accurately predict PPVA on knowing the patient, rather than on other means such as risk assessment instruments or tools or electronic notes, and as such knowing the patient appeared to be of great importance to participants. Nurses described getting to know patients by building a therapeutic relationship in a variety of ways, for instance by playing cards, talking about interests and using humor:

P8: Very rarely do we get near a computer to look back over a HCR-20 or past notes, so we are relying on meetings and peers to pass things on more through chit chat I suppose, which generally I think is pretty good, but you do worry things could be missed out. You try and interact with the guys on the ward too, playing cards etcetera just really building up a relationship so they know you and you know them. I would say that's how we generally get to know someone.

Importantly, building a relationship and knowing the patients seemed to be an ongoing process, and one of constant refinement testing and revising. Nurses appeared to be striving towards this goal of knowing more; recognizing that this process was never totally complete and that things could instantly change and become dangerous (P10: *You're just constantly being aware, so you can't become too relaxed or forget where you are*). Participants described how this process incorporated many skills in order to learn about an individual and also to identify what is 'normal' for an individual's presentation:

P6: It's about trying to watch the patients, observing that person and trying to read what's going on for them, basically getting to know them really well. If you have a new patient, basically it's probably, you know you're watching them constantly for any little quirky behaviors erm, any way they speak to somebody or are they staring at somebody in a particular way...It's just finding out what usual or not usual for someone I suppose and what their signs are.

By utilizing these skills (watching, listening and building relationships) not only were nurses able to work towards knowing the patients, but they could seemingly also begin to identify changes in presentation, or behavior which was out of the ordinary for a particular individual. This in turn allowed them to better notice an escalation in risk of

violence (P1: *you have to know what's normal for them and you're really looking for any escalation or change in behavior that might warn you something is about to kick-off*). Nurses' observations tended to focus on observable patient behaviors than assumptions about patients' emotions (P3: *it could be clenching fists it could be clenching jaws it could be, even just something as simple as standing up particularly straighter than normal and trying to be intimidating*). Ultimately, recognizing change appeared to provide opportunity for staff to intervene earlier with less intensive methods (P2: *You need to put things in place to minimize what's happening there*; P8: *It's trying to help them to know you're on side and helping them to problem solve or think about the problem and what other options they have, you can usually reason with them*).

Identifying underlying needs; a route away from violence and aggression

As part of striving to know patients, nurses also seemed to initiate conversations with them about past PPVA in order to help the patients, and themselves, learn from and reflect on incidents to identify possible triggers (P3: *talking...to get to the bottom of these things, why they've happened*). Interestingly, this process seemed to help nurses learn about the underlying needs of the patient:

P7: not just putting it down to 'that's behavioral', for us now it's about well, why is that behavior prominent, or what does that behavior mean. Erm, whereas before in continuing care it might have just been ahh it's because they're psychotic erm and they're just crying for help so to speak, whereas now using the behavior has a meaning behind it so it could be "I don't like the food" or they don't like the way someone spoke to them

Participants described recognizing emergent patterns over time, and how this helped to distinguish unmet needs which required addressing. By recognizing patterns in VA behavior as an expression of an unmet need, or underlying difficulty, nurses explained how they were able to introduce needs-led interventions or precautions, to prevent further PPVA of a similar nature:

P11: we can begin to learn more and understand the small things that are avoidable or need amending in future to avoid further aggression or violence. So you know like we said before if its someone getting jealous before visits,

trying to put in or provide more staff support before other guys have a visit, or giving him bedroom space or getting him out on a walk or something like that, it can prevent the build-up and the violence

In this sense, the process provided a possible route out of cyclical and recurrent PPVA by providing an understanding of the triggers and drivers behind the behavior, and in helping staff to identify relevant person-centered approaches for preventing PPVA. This route is akin to approaches often adopted in intellectual disabilities and dementia care literature based on a functional analysis approach to the management of ‘challenging behavior’ (e.g. James, 2011; Jones, 2014). Most nurses commented how this process also increased confidence and a sense of being able to manage risk in a more proactive way, rather than a reactive, firefighting response:

P12: he was unwell and when you realise that, and you can provide the care they need it makes you feel more confident like you know you’ve got things under control or in hand again.

Essentially, this theme indicates how better prediction by knowing a patient and their individual triggers, drivers and underlying needs, may in fact impact on nurses’ ability to manage future PPVA more efficiently.

Personal assumptions and beliefs

As earlier addressed, personal assumptions and beliefs about self and the patient appeared to be heavily influenced by the sub-type of PPVA. However, across both sub-types of PPVA, participants described questioning their actions post-incident:

P9: I’d just been questioning it so much, did I push it, did I do enough, I worried that maybe I was the first person there and I made it worse by not doing enough and not doing it quickly

Additionally, nurses expressed how their attitudes about the violence, and later coping, were greatly affected by the level to which they felt personally targeted. Where a staff member felt specifically targeted, more negative attributions and difficult emotions were apparent (P6: *I was diagnosed with PTSD afterwards...I think it was worse...someone’s shouting they’re going to kill you and smash your head in with a chair*), compared to where nurses were able to conclude that they were not targeted on

purpose, whereby although difficult feelings were recognized, a more positive and understanding view of the situation and patient was expressed:

P8: last week I was punched and for a split second you're angry but that's it, because you rationalise it and know why they've done it. After maybe you feel a bit more alert around that patient, but you don't treat them differently because...because very, very rarely is it you that they're actually targeting,

Essentially nurses appeared to be making judgements in order to make sense of their experience of PPVA, and in particular they were focusing in on intent and motive, which ultimately impacted their emotional experience. This is in-line with the attribution theory of helping behavior (Weiner, 1993) which explains that the way staff feel and respond to a patient is directly influenced by how they understand the reasons behind the behavior. More generally, attribution theory posits that people pay particular attention to behavior deemed as intentional (Jones & Davis, 1965) and suggests that this is likely to incur a greater emotional response. That said, following both sub-types of PPVA, participants were keen to portray how professionalism toward the patient overruled any negative feelings or thoughts toward them and as such there was a strong and common feeling of pushing difficult emotions and thoughts aside: (P12: *you're...being a professional and you just have to swallow that and get on, you can't hold a grudge*). This highlighted a number of beliefs about what it meant to be a nurse: to get on with things and get the job done (P9: *I stayed but erm, I didn't want to be here, and I couldn't stop shaking*; P3: *it's not pleasant, but...we have to crack on and deal with it as nursing staff*). Such beliefs appeared to be related to and impacted by cultural norms and values, explored further under 'confounding factors'.

Emotional impact and coping

Unsurprisingly, all nurses described experiencing high levels of arousal and hyper-vigilance following a violent or aggressive incident:

P6: it's just that constant, it's almost like a constant edginess, waiting for something to happen, and I've certainly noticed that in myself since that happened, and I definitely feel it more since then, now when we get a new

admission I'll always read through it and on the day they're coming in I can feel my reservations and a bit nervous, and its erm quite difficult.

However, how long and how difficult emotional recovery was, it appeared to be affected by two things; the person's personal beliefs and assumptions about the incident, and the confounding factors (Figure 1). Where nurses were able to see patients as mentally unwell, and relate this to the PPVA incident directly, they were able to continue working with them by focusing on their caring role, allowing themselves to let go of negative emotions (P12: *You can't hold a grudge because we're trying to inspire these guys, that you know they can...get well... they need us to give them the erm, just give them a chance and allow them to recover from mistakes.*). Where PPVA had appeared to be more targeted and planned, nurses described longer term difficulties with returning to work and with concerns about coming across the patient again, even if the patient or staff member had been moved ward to avoid further contact (P8: *you wake up in the morning and think oh could I phone in sick today... you can be a wee bit apprehensive to come back*). Additionally, emotions about returning to work following violence and aggressive incidents appeared to be impacted by the fear of other's perceptions (P2: *I can remember walking in thinking right what are people away thinking of me? Are they thinking I couldn't you know deal with the situation?*). Again, these experiences suggested a tendency for nursing staff to assume they should just be able to cope with these difficult experiences and emotions.

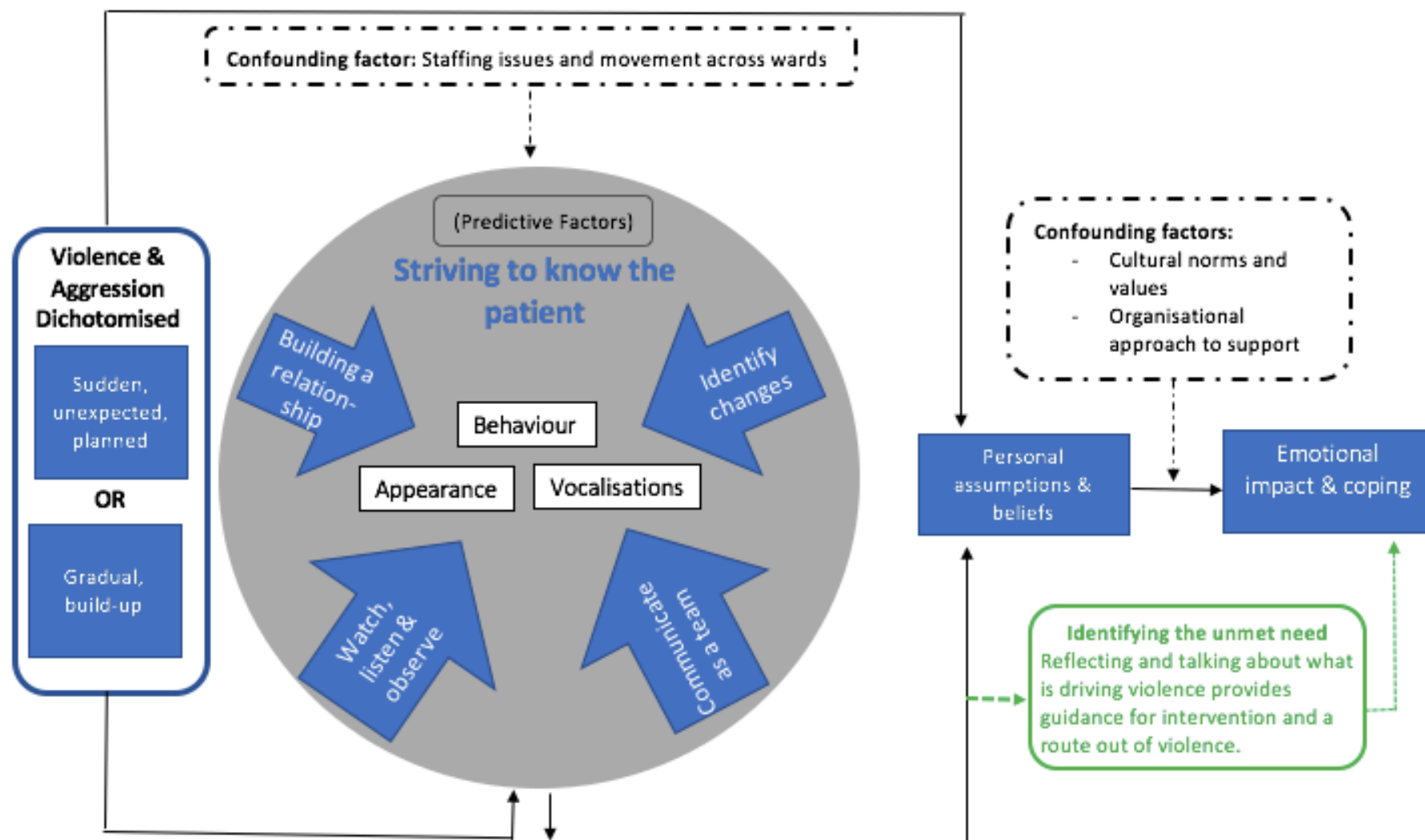
Unanimously, nurses spoke of feeling devalued and underappreciated within the organizational system (P4: *I've heard staff complaining about security and managers maybe not appreciating that they know the processes*) putting this down to post-incident focus being on evaluating what went wrong within any VA incident and how to change things for next time (P7: *the debrief is really about what happened, what went well, what went wrong and why, what we'll do next time*) (explored further in the following section). Participants also spoke of how it was common to feel patronized and misunderstood and how often staff from different disciplines did not seem to fully appreciate or understand what their role involved in terms of dealing with PPVA, which commonly contributed to feelings of anger and frustration. They also explained how these experiences and emotions tended to drive a wedge between nursing staff

and other disciplines who commonly did not have to intervene with violent and aggressive incidents:

P1: we get all these emails as well after any kind of incident...they basically say how to use your PAA [personal alarm] and reiterate all the policies and procedures we have done and do every day. It's pretty insulting because we're on the ground doing that all the time, and most of the time the people sending the emails aren't, but there's no emotion of how it must feel, or how it might be difficult or whatever.

Ultimately this seemed congruent with Social Identity Theory (Tajfel, 1974) which offers an explanation as to why people form different social groups based on shared norms and values. The theory suggests that a sense of togetherness and shared belonging can be found by identifying shared goals and values (Roodbol, 2010; Tajfel & Turner, 1979). In line with this, participants reported how inter-disciplinary separation was helped when other disciplines approached the wards to offer support during or after PPVA (P7:*to have staff supporting each other...or maybe arriving on the ward, that could help. I quite like the idea of that, particularly when something's more serious*). This appeared to enhance a sense of togetherness, whereby nursing staff felt supported and more appreciated.

Figure 1: Hypothesized model of how forensic psychiatric nursing staff predict and cope with violence and aggression



Sub-Themes as Confounding Factors

All participants explained how it was difficult to move wards to cover staff absence. It became apparent that the theme of ‘staffing issues and movement across wards’ impacted on nurses’ ability to get to know the patients, and to therefore recognize changes in behavior and presentation that may indicate risk:

P7: Yeah totally. Erm, I think there’s a lot of problems with staffing and people being moved around the wards and hubs for cover or on overtime shifts, and that can make it hard for people to know all the patients well.

The themes of organizational culture, and approach to support seemed to operate as confounding factors, both in terms of the attributions nurses held, but also in terms of emotional outcomes and consequences following PPVA. Firstly, in terms of attributions and beliefs, nurses seemed to feel higher levels of self-blame, questioning their actions where they expressed feeling less valued and supported by the organization. Most commonly, this complaint of lack of support and value, was apparent in the approach and style in which post-incident support was delivered:

P2: it wasn’t there, they weren’t checking in or asking how I was doing, and I wasn’t sure if I was meant to feel like that or if I should just be OK, it was hard to gauge what folks were thinking about me just then.

Essentially, nurses described feeling like there was no space made for emotional support, or for validating their actions. Rather it seemed that nurses experienced the organization’s priority as being to find out what went wrong, and what will be changed going forward (P4: *it’s being done just to tick a box...what about just sating ‘how are you, are you alright’*). Essentially, participants agreed how these experiences could often lead to them feeling like a cog within a larger machine and how their individual experience was perhaps unimportant to the wider organization (P6: *it’s just another thing to deal with at that time and then, just so de-valued and, and kinda just a number to them*). Ultimately this seemed to make it difficult for nurses to find a suitable time or place to voice concerns about their mental or emotional wellbeing following an incident which often led to staff not reporting difficulties, trying to cope alone (P9: *I had to go into the side room a few times when I felt*

shaky and tearful actually) and worrying about how the reporting of emotional difficulties would be received by the hospital (P2: *people maybe just don't know how to talk, think it's a bit weak...there's a lot of...wondering where the information's going, who's talking to who?*). Moreover, nurses expressed how PPVA became a part of their everyday experience, and explained how this became something they just had to accept and get on with:

P7: I think certainly within this place, the culture, and I think the kinda culture of other high secure hospital and prisons, these kinda places, we are exposed to high levels of violence and aggression it does become almost an everyday thing, that kinda 'ach well it's just another day at work'

Where post-incident support was delivered with greater levels of felt compassion and understanding, and where emotional impact was directly considered, questioned and valued, nursing staff expressed feeling more supported, and able to return to work more easily:

P4: I had support for a period of time when I came back so that really kinda buffered me which was really nice... it's that acknowledgement you went through something quite horrible, and actually that people cared, and you weren't kinda forgotten about.

Generally, participants all agreed that time off work was more acceptable and more likely to be encouraged following physical injury (P1: *you'll more likely be sent home straight away if you've been physically hurt*), further suggesting a culture whereby nursing staff are expected to cope with emotionally difficult situations arising from PPVA. However, where support for emotional difficulties arising from PPVA was encouraged by managers, nurses reported finding this helpful (P9: *my line manager...suggested the **** Centre...I didn't really think I needed it at the time, but I thought I'd give it a go. I did find it helpful*).

Discussion

This study aimed to explore how forensic mental health nurses both predict and emotionally cope with PPVA in a high-security setting. A qualitative analysis of twelve interviews resulted in the development of a hypothesized model that integrated the nurses' attempts to get to know the patient, their beliefs and attitudes about different sub-types of PPVA, and their emotional responses. The model also recognized how understanding the underlying needs driving PPVA could be a potential route away from further cyclical, or similar behavior. Additionally, the model demonstrates the complexity and sensitivity of risk prediction and coping processes by identifying various confounding factors. Whilst it is acknowledged that there may be multiple mediating factors beyond the scope of this study; the current model provides initial insights into some of the relevant features involved in these complex processes.

These findings suggest that PPVA can be assessed and potentially managed by the effective observation of patients; by observing for any change in behavior and presentation that might signify an increase in aggression. This finding is supported by Johnson (2006) who identified that in general psychiatric units, enhanced visibility in wards, and staff monitoring, were important in reducing risk. Additionally, current findings seem to mirror themes from the general health and general psychiatric literature regarding the need to know the patient, and aspects of nursing culture. Firstly, the present study suggests that knowing the patient is paramount in order to recognize behavioral cues for PPVA. The idea of using certain behavioral and appearance-related cues to predict PPVA is not new (Jackson, Wilkes, & Luck, 2014; Jackson, Wilkes, Waine, & Luck, 2014), and knowing the patient in order to reduce risk has also received some attention in the literature (Johnson, 2006). The current study however, furthers these ideas by explaining the link between using behavioral cues to help get to know the patient more fully. It also highlights the importance of 'knowing' in recognizing change in presentation within the individual, rather than just identifying a general checklist of behavioral cues. Current findings further advance our understanding by indicating how the process of knowing the patient, also leads into understanding the underlying needs that drive PPVA.

The process of striving to know the patient was associated with personal reflection, whereby nurses and patients talk over and think about what has happened in past (both recent and distant) PPVA incidents and develop an enhanced understanding of the triggers and contributing factors that led to PPVA. Social learning theory can offer some insight as to how individuals learn by reviewing their actions (Argyris & Schön, 1978). By considering social learning theory in risk prediction and management processes, it is possible to begin to think in a more preventative way, rather than a reactive way through 'talking people down'. The present study further suggests that the processes of social learning and reflection can help staff teams and patients to learn from previous PPVA by increasing understanding of underlying needs and drivers of such behavior, and so, help to introduce strategies to prevent and manage similar situations in the future. This is in-keeping with functional analysis approaches used clinically in the management of 'challenging' behavior (James, 2011; Jones, 2014). Studies on general psychiatric wards have also highlighted the importance of understanding the meaning behind the behavior (Johnson, 2006), and the need for reflection, learning and emotional support following violence (Secker et al., 2004).

Existing findings suggest nurses commonly accept violence as part of their job (Jackson, Clare, & Mannix, 2002; Jonker, Goossens, Steenhuis, & Oud, 2008; Stevenson et al., 2015). This was also found in the present study where there appeared to be a felt expectation for nurses to just cope and get on with things following PPVA. However more recently, it has also been found that nurses do not want to continue viewing PPVA as acceptable, which may indicate the start of a shift in attitudes (Stevenson et al., 2015). Within the present study nurses wanted permission to feel distressed and wanted help to identify sources of emotional support following PPVA. This suggests a need to be wary of the concept of 'total institutions' (Goffman, 1961); where institutionalization can breed certain cultures, norms and values. In this instance there may be greater need to challenge the cultural norm and assumption that PPVA is just part of the job for nurses, in order to offer greater support and understanding from an organizational level so as to promote staff wellbeing and promote a shift away from merely accepting workplace violence.

Despite experiencing PPVA, nurses unanimously expressed the importance of continuing to nurse well, putting the patient first and not holding a 'grudge'. This appeared to be somewhat easier for staff following violence they perceived to be less personally targeted, and less planned whereby participants explained attuning to the patient's mental health needs through demonstrating a non-judgmental, empathic approach. This approach is reminiscent of core humanistic principles (Rogers, 1961), which have been identified to aid recovery (Roberts & Wolfson, 2004).

Prior research has also suggested that mental health workers react differently to PPVA (Berring et al., 2016; Duxbury, 2002); the current findings may help to explain this phenomenon further; it was found that nurses beliefs and assumptions following a PPVA incident varied depending on the sub-type of violence (planned vs. build-up/unplanned); which then ultimately affected their emotional reactions. Attribution theory would suggest that individual's responses are directly influenced by their understanding of, and reasoning behind a behavior (Weiner, 1993).

It is clear from the present study that preventing and managing ward-based PPVA is a complex, dynamic process, involving nurses constantly learning and adjusting their approach. The lack of empirical evidence in the area to date may impede organizations from effectively justifying the need for funding for more staff and risk related training. Increased staffing levels could allow for greater observation of wards to pick up on predictive cues, and reduction in nurses being moved to cover absenteeism. Together this would allow nurses time and the environment to better know their own patients. Little is known about the impact of staffing on PPVA and the current findings suggest this could be an important area for future research. Furthermore, training on formulation and understanding the underlying needs and drivers of PPVA could help to prevent further incidents. This idea is supported existing literature which posits that violence prevention should be of primary concern (Luck et al., 2009).

Strengths, limitations and implications

Utilizing a social constructionist grounded theory methodology, the current study is influenced to some extent by the views and experiences of the researchers. Additionally, it is possible that nurses most effected by PPVA were not captured in the sample as they may have left the job, or currently be on sick leave. Volunteer bias should also be considered, as those more interested in the topic may have been more motivated to participate (Thompson, 1999).

Although the sample consisted only of 12 participants, multiple PPVA incidents were explored and it has been indicated that 12 participants are sufficient to attain theoretical sufficiency (Guest et al., 2006). Additionally, findings do suggest several important theoretical and clinical implications. As discussed, considerable similarities were present between the current hypothesized model, and other staff views and experiences identified within the literature, suggesting that the current model may 'fit' or be transferrable to other contexts similar in nature (e.g. medium and low security settings, or acute locked inpatient settings) (Chiovitti & Piran, 2003). However, further research would be necessary to ascertain the utility and applicability of the current model for staff in these settings.

The literature identifies that there is limited research exploring nurses experiences of predicting and coping with ward-based PPVA in secure settings and has highlighted this as an important area for further exploration (Oddie & Ousley, 2007; Trenoweth, 2003). There is even less work specifically investigating nurses emotional coping following PPVA incidents, and the factors which influence or impact on this process. The current study therefore provides vital information about how best to support staff nursing these difficult wards, which could impact in terms of staff retention, staff morale and sickness leave, which would ultimately provide patients with greater staff consistency, and reduce cost-burden to organizations. Moreover, the current study begins to understand how nursing staff make day-to-day risk judgements and assessments through observation of behavioral, appearance and vocalization cues; this could help organizations to prepare

training inline with this which could have implications for violence and aggression risk assessment.

The hypothesized model supports Trenoweth's (2003) findings by recognizing the complexity and multifaceted nature of risk prediction, but builds upon this by identifying the importance of a whole team approach in the successful prediction and management of PPVA and eventual coping. Previous literature has identified that teams can often feel 'stuck' with challenging, aggressive and violent patients and that this can often cause splitting within teams, evident with high 'blame cultures' and segregation between disciplines (e.g. Bowers et al., 2011; Godin, Davies, Heyman, & Shaw, 2006; Naish et al., 2002). The current hypothesized model may therefore have clinical utility in helping teams to take a more united approach in managing PPVA. It highlights the need for frontline nursing staff to strive to know their patients, and the importance of considering a functional analysis in order to improve prediction, and understand what interventions may be most appropriate to reduce repeated incidents. That said, it does not place blame or undue responsibility onto frontline staff, it recognizes the importance of the wider organization in supporting nursing staff both structurally (e.g. in terms of not being moved wards regularly) and emotionally (e.g. in terms of encouraging emotional expression following an incident of PPVA, and challenging long-held beliefs that staff should 'just get on with it'). Moreover, the model highlights a potential role for improved psychological formulation by recognizing the underlying needs that drive PPVA as vital in managing and preventing future violence. This offers scope for psychology teams to integrate more into the day to day management of PPVA on wards; potentially by offering training and consultation in functional analysis approaches for understanding an individual's risk presentation, and for care-planning.

The current study did not attempt to integrate patient's understanding or experiences into the model and as such, may have missed some phenomena that would contribute to these processes. Future work may therefore wish to consider how patient's experience these processes, for instance their experiences of reflecting on past PPVA with staff. Future research studies using quantitative methodologies would also be required to further

investigate and quantify the current findings and the mechanisms displayed within the hypothesized model.

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Appendices

Appendix A: Guidance for publication in The International Journal of Forensic Mental Health

The International Journal of Forensic Mental Health publishes original scholarship related to law and mental health. The journal is international and interdisciplinary, and values original research submissions, both quantitative and qualitative in nature, as well as literature reviews, case studies and theoretical articles. There is no maximum page limit or word count, but manuscripts should conform to the style requirements outlined in the Publication Manual of the American Psychological Association (currently in its 7th edition). The style requirements for this journal are provided below.

Manuscript Submission. *International Journal of Forensic Mental Health* receives all manuscript submissions electronically via the ScholarOne Manuscripts website (<http://mc.manuscriptcentral.com/UFMH>). ScholarOne Manuscripts allows for rapid submission of original and revised manuscripts, as well as facilitating the review process and internal communication between authors, editors and reviewers via a web-based platform. For ScholarOne Manuscripts technical support, you may contact them by e-mail or phone support via <http://scholarone.com/services/support/>. If you have any other requests please contact the editor of the journal, Dr. Barry Rosenfeld (rosenfeld@fordham.edu). Additional information on the ScholarOne system is available in the [guide for ScholarOne authors](#).

Please note that the *International Journal of Forensic Mental Health* uses [CrossCheck™](#) software to screen papers for unoriginal material. By submitting your paper to the *International Journal of Forensic Mental Health* you are agreeing to any necessary originality checks your paper may have to undergo during the peer review and production processes.

Each manuscript must be accompanied by a statement that it has not been published elsewhere and that it has not been submitted simultaneously for publication elsewhere. Authors are responsible for obtaining permission to reproduce copyrighted material from other sources and are required to sign an agreement for the transfer of copyright to the publisher. As an author, you are required to secure permissions if you want to reproduce any figure, table, or extract from the text of another source. This applies to direct reproduction as well as "derivative reproduction" (where you have created a new figure or table which derives substantially from a copyrighted source). All accepted manuscripts, artwork, and photographs become the property of the publisher.

Recommending Reviewers. The manuscript portal will request the names of potential reviewers. These should be individuals who you believe are qualified and appropriate to review the manuscript in an objective and informed manner. They should not be friends or collaborators, who are likely to be aware of your work and/or identity, and unable to objectively judge the submission. Typically these will be individuals that have published on the topic (e.g., authors that have been cited in the Introduction to your paper). You need not obtain permission from potential reviewers in advance. They will simply be added to our list of potential reviewers; they may or may not be contacted by the Editor/Associate Editor that processes your manuscript. If there are potential reviewers that you believe will not judge your work objectively, these individuals can also be identified during the submission process (i.e., as “non-preferred reviewers”).

Preparing Your Manuscript. The *International Journal of Forensic Mental Health* requires that all manuscripts be prepared in accordance with the APA Publication Manual, 6th edition. All parts of the manuscript should be typed, double spaced, in 12-point font, and with margins of at least one inch on all sides. Number manuscript pages consecutively throughout the paper. Authors should also supply a shortened version of the title suitable for the running head, not exceeding 50 character spaces. Manuscripts should be prepared for blind review, with a separate title page uploaded separately.

Title Page: The title page (which is not sent to reviewers, to preserve blind peer review) should contain only the title (preferably no more than 12 words), the author(s) names and the institutional affiliation for each author. Author credentials (e.g., degrees), mailing addresses, or acknowledgements should NOT be included on the title page. In addition, the title page should include a “Running Head” that will accompany the manuscript once typeset. The Running Head should not exceed 3-4 words.

Abstract: Each manuscript must include an Abstract (on a separate page) summarizing the content and key findings. Abstracts are NOT structured (i.e., are comprised of a single paragraph, without subheadings), and should not exceed 250 words. Avoid abbreviations, diagrams, and references. Some specificity regarding the study findings is also useful (e.g., some, but limited data rather than simply a statement that “significant associations were found between”).

The Abstract page should include 4-5 keywords indicating the primary focus of the manuscript (to facilitate search engines). Keywords should not be overly narrow or specific, but should provide sufficient information to enable search engines to identify the paper.

Manuscript Body:

Headings. The heading structure for all sections follows the same top-down progression, regardless of how many subsections are contained within any section. See below for an example of the indentation, font, and punctuation that should be associated with each level of heading.

Introduction Approaches to Violence Risk Assessment

Subheadings are NOT required in the Introduction, but when used, they must conform to the APA standards.

Method

The number and depth of subheadings within the Method section will depend on length and complexity. Many Method sections will simply include a description of the participants and setting where they were drawn, along with a summary of the sample characteristics – with no subheadings needed. For longer sections, consider using subheadings (and even sub-subheadings) to clarify the text. Most Method sections will include, at a minimum, subheadings for Participants, Procedure, and Statistical Analysis

Participants

Note that this level of subheading should use “title case”, where most words are capitalized. The text for this level of subheading should be indented, below the subheading. All

paragraphs in the manuscript should be indented, with no spaces between paragraphs. **Sample characteristics.** Note that this level of subheading (if used) should only

capitalize the first word. The text for this level of subheading begins on the same line.

Measures

Note that many studies will not need a separate subheading for measures, but rather will include this information in the Procedure section.

Instruments used to assess violence risk. Some studies will be sufficiently complex such that subheadings for predictors and outcome variables are useful.

Procedure

This section **MUST** include information about ethics approval for the study (assuming the paper describes a research study for which ethics approval is appropriate.

Statistical Analysis Plan

A brief summary of the statistical analyses, and how they will address the study questions and variables, is useful in helping guide the reader through the Results that will follow.

Results

Note that subheadings within the Results (and Discussion) will depend on content. See the paragraph below about formatting statistics.

Discussion

The Discussion section should DISCUSS the study findings, not simply repeat them. What are the implications, how much we understand contradictory or counterintuitive findings?

Limitations

A discussion of study limitations – not simply a sentence listing them, is essential to interpreting the data from virtually every published study.

Conclusions

Reporting Statistics. All statistics should be reported in accordance with APA style. In general, this means italicizing the actual statistic (F), including the d.f., and giving exact p values ($p = .03$, not $p < .05$). A p value below .001 should be reported as $p < .001$, not $p = .00$. Most statistics should include 2 decimal places, but in some cases one may be sufficient (e.g., percentages, means, etc). Three decimal places should be limited to situations where small gradations are meaningful (e.g., $p = .002$, or for describing fit statistics for multivariate models, where small differences are relevant). Whenever possible, effect size estimates and 95% confidence intervals should be provided. Statistics that are presented in a table need not be repeated extensively in the text, unless there is a logical reason to do so (e.g., to highlight key findings, or identify the handful of significant findings from a larger pool of analyses).

However, you should refer to the table in the text and emphasize particular data in your narrative that may help the reader to interpret your findings. Examples of how to report inferential statistics in the body of your manuscript are provided below.

□ Correlations

To test the hypothesis that positive associations would exist between psychopathy and violence risk, Pearson correlation analyses were performed and can be found in Table 1. Contrary to predictions, although PCL-R Factor 1 was significantly related to violence risk ($r = .37, p < .01$), PCL-R Factor 2 was not (r

$= .10, p = .29$).

- ANOVA

Mean PCL-R scores differed significantly across risk categories, $F[5, 38] = 4.01, p = .01$.

Significant differences between risk categories were revealed in pair-wise comparisons.

Participants with low risk ratings had significantly lower psychopathy scores ($M = 5, SD = 1.2$) than those with moderate risk ratings ($M = 10, SD = 3.3$) and those with high risk ratings ($M = 24, SD = 4.1$).

- Regression: When entered into a regression, age, number of prior arrests, and number of prior hospitalizations predicted violence risk rating $F[3,44] = 2.36, p = .02$, accounting for 27.3% of the citations and the reference list should be prepared in accordance with the APA Publication Manual, 6th edition.

In the body of the manuscript, cite the reference by author and publication date.

Examples are provided below.

- One work by one author: (Smith, 1983)
- One work by multiple authors: (Smith, Jones, & Miller, 1983)
 - For subsequent citations, one work by three or more authors can be cited as: (Smith et al., 1983)
- One work by six or more authors: (Smith et al., 1983)
- Two or more works within the same parentheses
 - Two or more works by the same author should be arranged by year of publication: (Smith, 1983, 1987)
 - Identify works with the same author and same publication date with suffixes: (Smith, 1987a, 1987b)
 - Two or more works by different authors should be organized alphabetically, as they appear in the reference list: (Hart & Steinman, 2000; Smith, Jones, & Miller, 1987)

The reference list should be organized alphabetically and should come at the end of the article.

A general outline of the entry is as follows: Author, A. A., Author, B. B., & Author, C. C. (year).

Title of article. *Title of periodical*, volume, pp-pp. doi: xxxxx.

More specific examples are provided below.

□ Journal Article:

Tsai, M., & Wagner, N. N. (1978). Therapy groups for women sexually molested as children.

Archives of Sexual Behaviour, 7, 417-427. doi: 10.1037/0096-3445.134.2.258 □ Book:

Millman, M. (1980). *Such a pretty face*. New York: W.W. Norton.

□ Book chapter:

Zirkel, S. (2000). Social intelligence: The development and maintenance of purposive behavior. In R. Bar-On & J. D. Parker (Eds.), *Handbook of Emotional Intelligence* (pp. 3-27). San Francisco, CA: Jossey-Bass.

Examples of other types of references should refer to the Style Manual for the American

Illustrations. Illustrations submitted (line drawings, halftones, photos, photomicrographs, etc.) should be clean originals or digital files. Digital files are recommended for highest quality reproduction and should follow these guidelines:

300 dpi or higher

Sized to fit on journal page

EPS, TIFF, or PSD format only

Submitted as separate files, not embedded in text files

Color Illustrations. Color art will be reproduced in color in the online publication at no additional cost to the author. Color illustrations will also be considered for print publication; however, the author will be required to bear the full cost involved in color art reproduction. Color reprints can only be ordered if print reproduction costs are paid. Print Reproduction: \$900 for the first page of color; \$450 per page for the next three pages of color. A custom quote will be provided for articles with more than four pages of color. Art not supplied at a minimum of 300 dpi will not be considered for print.

Tables and Figures. Tables and figures (illustrations) should not be embedded in the text, but should be included as separate sheets or files (appended to the end of the manuscript, in APA style). A short descriptive title should appear above each table with a clear legend and any footnotes suitably identified below. All units must be included. Figures should be completely labeled, taking into account necessary size reduction. Captions should be typed, double-spaced, on a separate sheet. Tables MUST be a) properly formatted, b) coherently organized, c) legible, and d) relevant. Any acronyms or abbreviated terms must be spelled out in the Note below the table (even if the acronyms have already been spelled out in the body of the manuscript). Tables should NOT simply be cut-and-pasted computer output. Tables that are completely redundant with the text are typically unnecessary. Consider whether each table (and figure) provides important information that complements the text.

Proofs. Page proofs are sent to the designated author using Taylor & Francis' Central Article Tracking System (CATS). They must be carefully checked and returned within 48 hours of receipt.

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Open Access. Taylor & Francis Open Select provides authors or their research sponsors and funders with the option of paying a publishing fee and thereby making an article fully and permanently available for free online access – *open access* – immediately on publication to anyone, anywhere, at any time. This option is made available once an article has been accepted in peer review. Details can be found on the journal's Taylor & Francis webpage.

Appendix B: Demographic information sheet



THE UNIVERSITY *of* EDINBURGH



An exploration into how forensic mental health nurses predict and cope with violence and aggression in a high-security setting

Participant Demographics Form

What is your gender?

What is your age? _____ years and _____ months.

How would you define your ethnicity?

For how long have you worked at The State Hospital? _____ years and _____ months.

Please circle which of the following applies to you:

I am a qualified nurse

I am a nursing assistant

Appendix C: Initial semi-structured interview schedule

Introduction to interview:

Note: interview will start with completion of the basic demographics form and a discussion about any questions arising from the information and consent forms. A brief discussion will take place to introduce the interview before discussing more emotive topics such as personal experiences of violence, this discussion will include:

- Can you tell me a little about your experience of being a nurse in a high secure setting?
- How would you define the terms 'violence' and 'aggression'?

Main interview:

- Can you tell me about the last time you were present on the ward when there was a violent incident (*Prompts: what's it like? How did you feel? What happened? Who was there? What was it like afterwards?*)
- What's it's like on the ward before a violent or aggressive incident happens? (*Prompts: What's happening? Who's usually there? Do you know it's about to happen, and if so how? Does anything happen or change? Is it always the same way? What does it feel like? How is it different from other times on the ward?*)
- What happens after a violent or aggressive event? (*Prompts: what do you do? Who's involved? How do you feel? Does the ward feel different in anyway, if so how?*)
- Can you explain how you think you manage or cope after experiencing a violent or aggressive incident on the ward? (*Prompts: What do you do? What helps? What's unhelpful? What goes through your mind? How do you feel about the support mechanisms in place at the hospital?*)
- What would you like to have in place to support staff with working with violence and aggression on the wards? (*Prompts: what would be more helpful? Could anything be different? Who could help? What could help? If it was perfect, how would it be?*)

Appendix D: University of Edinburgh Ethics Committee Approval



SCHOOL OF HEALTH IN SOCIAL SCIENCE
CLINICAL AND HEALTH PSYCHOLOGY

The University of Edinburgh
Medical School
Doorway 6, Teviot Place
Edinburgh EH8 9AG

Telephone 0131 651 3969
Fax 0131 650 3891
Email submitting.ethics@ed.ac.uk

Katherine Nunn
Trainee Clinical Psychologist
School of Health in Social Science
University of Edinburgh

24 November 2016

Dear Katherine,

Application for Level 1 Ethical Approval

Reference: CLIN328

Project Title: An exploration into how forensic mental health nurses predict and cope with violence and aggression in a high security setting

Academic Supervisor: Ethel Quayle

Thank you for submitting the above research project for review by the Department of Clinical and Health Psychology Ethics Research Panel. I can confirm that the submission has been independently reviewed and was approved on the 22nd November 2016.

Should there be any change to the research protocol it is important that you alert us to this as this may necessitate further review.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'K Gardner'.

Kirsty Gardner
Administrative Secretary, Clinical Psychology

Appendix E: The State Hospital Board for Scotland Research Committee Approval

Katherine Nunn
Trainee Clinical Psychologist
The State Hospital
Friday the 30th of September 2016

Dear Katherine,

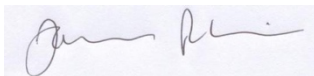
Re: An exploration of how FMH nurses predict and cope with violence and aggression in a high secure setting

Many thanks for resubmitting your research proposal that was originally reviewed by the TSH Research Committee on Thursday the 25th of August 2016. The committee felt that you had addressed the areas of concern and clarification as outlined in your feedback letter and are happy to approve the study. This letter will be copied to the Associate Medical Director who will subsequently provide final management approval for the study to take place within TSH.

One condition of the research committees' approval is that you provide the committee with regular 6-monthly progress reports, and a study final report focused on the how the study findings should be implemented within practice. This is an important mechanism by which the committee track progress and is also a key component of our research governance processes.

If you require any further assistance or have any feedback on the Research approval process then please do not hesitate to contact me.

Yours sincerely



JAMIE PITCAIRN
Research & Development Manager
The State Hospital

Appendix F: Participant invitation and information sheet



THE UNIVERSITY *of* EDINBURGH



An exploration into how forensic mental health nurses predict and cope with violence and aggression in a high-security setting

Invitation to take part in research study

- The study will look at thoughts, feelings and life experiences of frontline ward-based nursing staff at The State Hospital in relation to both predicting and coping with ward-based violence and aggression.
- The study is conducted by Katherine Nunn who is a Trainee Clinical Psychologist with The State Hospital and NHS Lothian and a psychology postgraduate doctoral student at the University of Edinburgh.
- If you would like to take part in the study Katherine will meet you for one-hour to collect consent, background information and conduct the interview. The interview can take place at The State Hospital in the Learning and Development Centre in a private room. This can be arranged for a time that best suits you, for instance directly before or after a shift.
- Taking part in the study is completely voluntary, confidential and anonymous.
- Taking part or deciding not to take part will not affect your current employment or employment rights, or your access to existing support systems within the hospital.
- More information about the study is provided on the following page or you can contact the researcher for more information (s1580008.sms.ed.ac.uk).



An exploration into how forensic mental health nurses predict and cope with violence and aggression in a high-security setting

Participant Information Sheet

1. What is the purpose of the study?

Nurses working in The State Hospital are at times exposed to incidents of violence and aggression. Incidents of violence can cause problems with high staff turnover, burnout, low morale and difficulty with recruitment of nursing staff. It can also effect patient care for instance in terms of the therapeutic relationship.

Currently there is very little research investigating how nursing staff predict and cope with immediate violence and aggression, specifically within secure (forensic) settings. Whilst the hospital does have in place various methods for assessing risk these mainly focus on providing information for long term reviews and fail to provide tools for assessing immediate day to day risk on the ward. Similarly whilst there are some forms of support in place, as you are aware there is currently no formal or structured debrief process.

The purpose of this study therefore is to investigate the day-to-day strategies and skills nursing staff use to predict immediate violence and aggression on the ward, and to explore their reactions to, and ways of coping with these incidents.

2. Why Have I Been Invited To Take Part?

You have been invited to take part because you are a frontline nurse who works in one of the wards within The State Hospital.

3. Is it Mandatory to Take Part in The Study?

No. Your participation is entirely voluntary. If you do decide to take part, you will be asked to sign a consent form. You are free to withdraw from the study at any time you choose without giving a reason. You are under no obligation to answer any questions which make you uncomfortable.

4. What Will Taking Part in The Study Involve for Me?

If you choose to take part in the study you will be invited to take part in an interview with the researcher. This interview will last approximately forty-five to sixty minutes, although if you think this seems too long you can discuss this further with the researcher. During the interview you will be asked about your thoughts, feelings and experiences both predicting and coping with violence and aggression on the wards. The researcher, with your agreement, will email you a copy of the transcript and ask you to confirm accuracy to ensure the researcher has a true and accurate understanding of the information you provided. You will also be able to contact the researcher at any time should you wish to discuss anything further with the details provided in these sheets.

5. Will I Receive Payment or Expenses for Taking Part in The Study?

No, you would not receive payment or expenses for taking part in the study as it will be conducted during your normal working day at your place of work.

6. Will there be Any Disadvantages to Being Involved in The Study?

The researcher would propose that there are no disadvantages to being involved in the study. On the contrary it is hoped that the findings of the study would help to improve staff support.

7. Will My Details be Kept Confidential?

Yes. All information pertaining to you will be handled in confidence and at all times the researcher will adhere to ethical and legal guidelines. All information will be stored safely and securely in accordance with The State Hospital's policies and procedures and all collected data will be anonymised in order to protect your identity.

8. What will happen to the results of the study?

When the data has been analysed the main findings will be summarised and sent to you via email (unless you request for this not to be done). You will then be able to look through these findings and add your own comments and suggestions to them. The results will be based on the information given by all participants interviewed. It will not identify any one participant but will describe overall experiences. The results will also be presented to local criminal justice services, other researchers, and criminal justice and mental health professionals.

9. Who is organising and funding the research?

Katherine Nunn is a trainee Clinical Psychologist from the Psychology Department of Clinical Psychology at Edinburgh University and Mull hub at The State Hospital. As part of her doctoral degree she is required to conduct a research project. The current study is supervised by Dr Ethel Quayle, Senior Lecturer and Clinical Psychologist, and Dr Joe Judge Clinical Psychologist at The State Hospital. The research is funded by NHS Education for Scotland and has been approved by the University of Edinburgh Ethics Committee and The State Hospital Ethics Committee. If you have any comments or complaints about the research, please contact Dr Ethel Quayle on 0131 6513 943.

10. Can I Contact Anyone Should I Have Any Questions or Concerns?

Yes. You can contact the researcher at any time: Katherine Nunn s1580008@sms.ed.ac.uk

Alternatively you can contact the Researcher's Academic Supervisor whose details are also provided: Dr Ethel Quayle on 0131 6513 943, Ethel.Quayle@ed.ac.uk

If you wish to make a complaint about the study please contact Charlotte Clark at the University of Edinburgh on Charlotte.Clarke@ed.ac.uk or through the web link below.

<http://www.ed.ac.uk/files/imports/fileManager/WEB%20Complaint%20Form.pdf>

11. What Do I Do Now if I Have Decided To Take Part In The Study?

Thank you for taking the time to read this information and to consider participating in this study. If you have decided you would like to take part then please email (s1580008@sms.ac.ed.uk) the researcher to arrange a time most suitable for you to complete the interview. In your email please include your completed consent form. If you would prefer not to email this form, we can complete it together at the start of the interview.

Please feel free to contact the researcher at any time should you have any further questions or would like some additional information.

Appendix G: Consent Form



THE UNIVERSITY *of* EDINBURGH



An exploration into how forensic mental health nurses predict and cope with violence and aggression in a high-security setting

Participant Consent Form

Primary Researcher: **Katherine Nunn**

Academic Supervisor: **Ethel Quayle**

Clinical Supervisor: **Joseph Judge**

If you would like to take part in the research study, please read and sign this form. Also please put your initials in each box.

☐

1. I confirm that I have read/been read and understand the information sheet for the above study and have had the opportunity to ask questions.

☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

☐

3. I understand information will be treated anonymously and in confidence except when there are disclosures relating to potential harm to self or others including children or to undisclosed criminal activity.

☐

4. I understand that direct anonymous quotes will be used in the study.

☐

5. I understand that participation in this project will not affect my current employment or employment rights.

☐

6. I understand that the interview will be digitally-recorded. My name will not be used in any written transcripts and the digital recordings will be destroyed at the end of the research period. The information will be stored safely and securely in accordance with The State Hospital's and University of Edinburgh's policies and procedures on record keeping and storage.

☐

7. I understand that the information gathered from interviews will only be shared with the researcher's supervisors.

☐

8. I understand that findings of the study will form the basis of a doctoral thesis which may result in possible publication. The findings may also be shared with colleagues in the field of forensic and clinical mental health to help improve staff support, and prediction of short-term/immediate ward based risk.

☐

9. I agree to take part in the above study

Name of person taking consent:

Service:

Name of participant:

Signature:

Date:

Original (x1) to be retained in site file. Copy (x1) to be retained by the participant

Appendix H: Sample Coding

Interview transcript	Line-by-line coding	Focused codes
<u>Participant:</u>		
“Usually a lot of the guys have the same sort of problems, it can be similar signs, and you just have to sort of investigate, put 2 and 2 together, talk as a staff team and piece it all together, for example a guy might be because he’s jealous of visits if he’s not getting any, so maybe you learn that because it’s always happening at the same time you know. Erm usually you’re just gauging what’s happening and looking for wee signs around”	<i>Recognizing underlying problems in patients</i> <i>Piecing together information to understand patient behavior</i> <i>Recognizing patterns for patients</i> <i>Watching out for warning signs</i>	Uncovering the underlying need Attempting to understand triggers Communicating as a team to learn about the patient Learning through reflection
<u>Researcher:</u>		
“And how do you, because you said sometimes things do escalate into a violent incident, but often you’re able to step in and stop it escalating, how do you know when you need to step in?”		
<u>Participant:</u>		
“It’s all body language in here, its arms swinging or shouting, coming in your space, right up to you, pointing, shouting, banging doors, maybe it’s more than just shouting, the physical cues maybe get more. Sometimes they get a bit personal maybe depending who’s there, but it depends”.	<i>Observing physical cues and signs of aggression</i> <i>Recognizing it can affect you</i>	Observing to learn about the patient Recognizing personal cues to violence

Appendix I: Copy of thesis proposal



Doctorate in Clinical Psychology

Thesis Research Proposal

(Research 1 Assessment)

This form should be completed and submitted as the assessment for Research 1. It will then be reviewed by a member of the academic team and will receive a grade and detailed feedback. The feedback will include an evaluation of the viability of the project and any recommendations. If there are significant concerns about viability, the project will be flagged to the research director and the research committee will decide whether the project can proceed in its current form.

Exam Number
B082207

Provisional Thesis Title
An exploration into how forensic mental health nurses predict and cope with violence and aggression in a high-security setting.

Proposed Setting
The State Hospital

Allocated Thesis Project Supervisors

Clinical	Dr. Joe Judge
Academic 1	Dr. Ethel Quayle
Academic 2	n/a
Others Involved	n/a

Anticipated Month / Year of Submission

Must be final year for full-time trainees. For flex trainees, the month and year of submission will depend on the individual Training and Development Plan. Trainees from 2011 intake onwards must submit in May. Trainees who started in 2010 or earlier are advised to submit in May to reduce potential for HCPC registration difficulties.

May 2018

Please Note: Whilst this is not an ethics review process, where questions have some similarities to questions contained in the NHS IRAS Research Ethics form, the corresponding IRAS question numbers are given in parentheses. This is intended to facilitate completion of NHS ethics where such approval is needed.

Section 1: Introduction

1.1 Provide a brief critical review of relevant literature, which should clearly demonstrate the rationale and scientific justification for the research

1000 – 1500 words

Relevant to IRAS A12

Violence and Aggression in Nursing

Workplace aggression or violence is a significant public health concern among health care workers (Hesketh *et al.*, 2003). This is not a new problem (Coffey, 1999; Coffey & Coleman, 2001; Itzhaki *et al.*, 2015; Jenkins & Elliott, 2004; Sullivan, 1993), however incidents of violence

are on the rise, particularly in psychiatric settings (Gignon *et al.*, 2014; Koukia, Mangoulia, Gonis, & Katostaras, 2013; UNISON Scotland, 2014). Reported incidents of assault on NHS staff were 68,683 in 2013-14; an increase of over 5000 incidents from the previous year (Merrifield, 2014), and almost 70% of these were in psychiatric settings. Whilst this already appears to be high, it is likely that true assault rates are even higher due to under-reporting with research suggesting that nurses may only report 30% of assaults actually experienced (Jacobowitz, 2013).

Mental health nurses are more likely to be physically assaulted, threatened and verbally or sexually abused than any other health profession group (Itzhaki *et al.*, 2015; Shiao *et al.*, 2010). Between 25-80% of nurses working in acute care hospitals have reported experiencing patient violence (Stevenson *et al.*, 2012).

Literature indicates that it is difficult if not impossible to complete effective psychological therapy while a patient is in seclusion, moreover seclusion may in fact lead to increased violence and aggression and there is little evidence that seclusion provides any long-term behavioural change or benefit (Fluttert *et al.*, 2010; Newton-Howes, 2013). As such, in psychiatric settings, nurses are often left grappling a balancing act between 'security versus therapy', 'dangerousness' and 'management of violence' (Mason *et al.*, 2009). Resultantly, a key role of psychologists within psychiatric settings is to help manage this dichotomy. Psychologists aim to reduce and monitor risk of violence, to achieve psychological change with patients, and to promote and support multi-disciplinary team staff in fostering psychological change by implementing techniques, strategies and supervision in ward environments.

Violence and Staff Wellbeing

Mental health nursing is a stressful occupation, with 23–44% of mental health nurses experiencing clinical levels of psychological distress (Edwards & Burnard, 2003). Whilst causes of distress vary, research studies have consistently identified patient-perpetrated aggression and violence as a considerable contributing factor (Lee *et al.*, 2015).

The short or long-term exposure to any type of violence can result in negative outcomes. Negative consequences for nurses can include, but are not limited to, reduction in self-esteem and confidence (Baby, Glue & Carlyle, 2014), increased anxiety, fear and anger (Nau, Dassen, Halfens, & Needham, 2007) and experience of post-traumatic stress, guilt and shame (Jacobowitz, 2013; Lee *et al.*, 2015).

At the organisational level, workplace violence has been linked to high staff turnover, burnout and difficulty with nurse retention (Roche, Diers, Duffield, & Catling-Paull, 2010; Viotti, Gilardi, Guglielmetti, & Converso, 2015), decreased morale, nurse absenteeism, greater costs due to

disability and sickness leaves, reduced job satisfaction and reduced quality of patient care (Stevenson *et al.*, 2012).

Violence and Aggression in Secure Forensic Hospitals

Whilst a large literature exists documenting the relationship between patient perpetrated violence and staff outcomes in general mental health wards, interestingly there is little focusing on secure forensic hospitals although staff in these settings are working with patients with the highest propensity for violence (Oddie & Ousley, 2007; Ros, Van der Helm, Wissink, Stams, & Schaftenaar, 2013). Literature that does exist in forensic settings tends to focus on the assessment and management of long-term risk, with a focus to discharge patients to lower-security and eventually prison or community settings. Moreover, this literature focuses on how clinicians assess risk or predict violence (Nijman, Merckelbach, Evers, Palmstierna, & à Campo, 2002), the numerical level of risk on wards using standardised risk assessment tools like the HCR-20 (Bjorkdahl *et al.*, 2006) and what contributes to aggressive behaviour (Ros *et al.*, 2013), and fails to identify nurses' experiences of the day to day management and prediction of ward-based, short-term risk.

Nurses working in secure forensic settings run a high risk of being confronted with inpatient violence day to day (Fluttert, van Meijel, Nijman, Bjorkly, & Grypdonck, 2010). There are four high-security hospitals in the UK. An audit of violent incidents in one such hospital (Green, McIntosh, & Barr, 2008) found that 130 incidents occurred during a 12-month period. Interestingly, while 40% of these incidents were classified as moderate and only 15% as serious, restraint and breakaway techniques were used to manage over 52% of incidents (Pulsford *et al.*, 2013). Currently The State Hospital observed a decrease in number of violent incidents requiring use of breakaway techniques, but an increase in personal alarm calls from staff (Smith, 2015) which suggests that although incidents of violence may be decreasing, staff may still be feeling threatened or unable to cope. There is currently no explanation to these figures which makes it difficult to implement change and improvement, or to understand how best to support those nursing these difficult wards.

Predicting Violence and Aggression

Whilst it is clearly important to recognise the effect violence and aggression have on nursing staff, and how best to provide support for this, empirical literature also implies that the primary way to stop violence in any form should be to prevent it before it begins (Luck *et al.*, 2009). Literature posits that this can be achieved through early recognition of behavioural cues and signs of aggression (Fluttert, van Meijel, Nijman, Bjorkly, & Grypdonck, 2010) which allows

staff to react with greater confidence and precision in intervening psychologically and physically to de-escalate and thereby avoid violence (Davies et al., 2015).

Existing literature on managing and predicting violence is quantitative in the most part, tending to focus on evaluating measures, checklists or methodical strategies for measuring and predicting violence on wards (Bjorkdahl, Olsson, & Palmstierna, 2006; Doyle & Dolan, 2002; Fluttert *et al.*, 2010). Established actuarial risk data such as patient's previous violence, drug abuse or certain psychiatric diagnoses have shown good accuracy in the long-term prediction of violence, instrumentalised by, for example, the Historical, Clinical and Risk Management (HCR-20) risk assessment tool (Bjorkdahl *et al.*, 2006). However in the short-term prediction of in-patient violence, the same risk data seem to have lower predictive capacity (Amore *et al.*, 2008; O'Shea & Dickens, 2015). In forensic psychiatric wards, short-term prediction of violence is of utmost importance in order for nurses to focus on early prevention, to reduce seclusion and increase psychological working and to maintain a safe and secure ward environment for both themselves and other patients (Bjorkdahl et al., 2006; Edward *et al.*, 2016; Nijman, Merckelbach, Evers, Palmstierna, & à Campo, 2002).

Research has suggested that nurses have skill in recognising early cues for violent behaviour as they provide around the clock care and are often subject to violence and aggression from patients (Abderhalden *et al.*, 2004; Fluttert *et al.*, 2010; Hamilton & Manias, 2007; Nau, Dassen, Halfens, & Needham, 2007). This has been investigated using a quantitative approach in physical health settings (Marlasca, 2014; Roy, 2013). However, research has not yet investigated this in terms of inpatient secure forensic mental health settings. This seems vital as in such settings one of the main objectives for a healthcare team is to assess risk and risk of violence as accurately as possible, and to manage this for both staff and patients.

Summary

While in recent years there has been an increase in the number of studies examining occupational stress among community mental health and hospital nurses (Coffey 1999; Coffey & Coleman, 2001; Gignon *et al.*, 2014; Itzhaki *et al.*, 2015; Koukia *et al.*, 2013; Roche, Diers, Duffield, & Catling-Paull, 2010) the experiences of staff in secure forensic settings have received far less attention, particularly in recent years (Coffey, 1999; Oddie & Ousley, 2007; Ros, Van der Helm, Wissink, Stams, & Schaftenaar, 2013).

To date the main focus of the existing literature in the forensic area is divided between how clinicians risk assess or predict violence (Nijman *et al.*, 2002), the numerical level of risk on wards using standardised risk assessment tools like the HCR-20 (Bjorkdahl *et al.*, 2006) and what contributes to aggressive behaviour (Ros *et al.*, 2013). Whilst these provide an understanding of the levels of risk on wards, they fail to understand the nuances and lived experience of staff working day in day with patients, making constant clinical decisions and

assessments using clinical judgement, and the impact this experience and these judgements have on assessing and managing violence on a ward.

Interestingly, existing literature has identified our lack of knowledge of nurses experiences in secure settings and has highlighted this as an important area for or further exploration (Coffey, 1999; Oddie & Ousley, 2007). Within this researchers suggest focusing on identifying clearly the things that lead to stress and anxiety, but also in identifying strategies which may help reduce and support these difficulties; both preventative and reactive. This seems vital as literature has indicated that the implementation of stress management courses for staff has had negative effects and has been poorly attended (Coffey, 1999). This suggests that provision is not meeting the need of nursing staff and that different approaches need to be developed; however research has failed to investigate this further over the past 17 years. Moreover Itzhaki *et al.*, (2015) indicate that it is not merely experiencing violence, but rather how an individual reacts to it that indicates whether negative outcomes will occur, however we have no explanation as to why individuals react in different ways, and to what they find helpful or unhelpful following an incident in these settings in order to promote greater resilience (Hallett *et al.*, 2014).

The present study aims address these gaps and criticisms in the current literature. In doing so, it is set within a high-security hospital and its purpose is to investigate, using grounded theory methodology, the day-to-day strategies nursing staff use to predict violence and aggression on the ward, and to explore their reactions to and coping strategies for such incidents.

Important clinical implications are outlined in section 8.2 of this document.

Section 2: Research Questions / Objectives

2.1 What is the principal research question / objective?

IRAS A10

This study aims to explore how forensic mental health nurses predict and cope with violence and aggression in a high-security setting and the psychological processes impacting on these phenomena.

2.2 What are the secondary research questions / objectives, if applicable?

Keep these focused and concise, with a maximum of 5 research questions

IRAS A11

- To understand more about how nurses undertake short-term ward-based risk assessment
- To understand more about what support may be helpful for frontline nursing staff in secure hospital settings

Employing a grounded theory approach has implications for developing research questions at the research proposal stage (Glaser, 2013). Questions used for data collection cannot be fully pre-determined before the process of research begins. Rather, questions will be shaped and will emerge by use of theoretical sampling in the research process; that is, that questions will emerge from the data analysis (Elliott & Lazenbatt, 2005).

Section 3: Methodology

3.1 Give a full summary of your design and methodology

It should be clear exactly what will happen at each stage of the project

IRAS A13

Design

The research question is open and explorative in nature, identifying the phenomena for investigation without making assumptions about it and so is appropriate for a qualitative, grounded theory approach (Barney Glaser, 2013). As the grounded theory analysis progresses, the research question will become more focused. This will be aided by the processes of theoretical sampling and sensitivity (*see Section 2.2 & Section 5*).

The research will be qualitative in design utilizing semi-structured interviews and a social constructivist approach to grounded theory (Charmaz, 2006). This approach acknowledges the researchers role in shaping themes and categories and as such hopes to address and reduce any potential bias (Cho & Lee, 2014). It also emphasizes the importance between the data and researcher for discovering ideas and concepts (Hussein, Hirst, Salyers, & Osuji, 2014).

Qualitative design has been shown to be appropriate for the exploration of poorly understood phenomena (Hedderman, Gunby & Shelton, 2011) and as such it is suitable to investigate *how* front-line nursing staff predict cues of violence in their day to day work, and the reasons *why* these roles are so often associated with high burnout, stress and depression in other research. Specifically it will help to theorize why we are witnessing higher levels of depression, anxiety and sickness leave than in other streams of nursing profession, and why there have been increased personal alarm calls in the light of reduced violence at The State Hospital.

As an approach, grounded theory moves between data and theory allowing new theories to emerge (Hussein *et al.*, 2014). For the present study, this will allow new theories and understanding to develop to help identify what it is that informs day to day, short-term risk assessment apart from standardized assessments. Additionally it will merit a theoretical understanding of what it is about working in these environments that leads to reduced work satisfaction, depression, stress and anxiety. As such the study will hope to be able to provide suggestions for intervention- improvement to risk assessment, and prevention of burn out, or at the very least, systems designed to support staff in the best possible way.

Although quantitative approaches have dominated the literature investigating prediction, management and experience of violence and aggression in psychiatric settings, a limited but emerging literature is adding the evidence from a qualitative stance. For instance, grounded theory has been used successfully to begin to develop greater understanding of the management of violence in inpatient psychiatric settings (Johnson, 2006; Hallett *et al.*, 2014) and as such seems comparable for exploring similar phenomena in secure forensic psychiatric settings for the present study. Additionally, grounded theory has been used to develop a strong evidence base in understanding other areas of violence, for instance domestic violence (Catallo, Jack, Ciliska, & MacMillan, 2013; Kearney, 2001; Merchant & Whiting, 2015).

Participants & Recruitment

The participant sample will be purposefully selected using homogeneous sampling in order to recruit ward-based, front-line nursing staff at The State Hospital, NHS Scotland.

As such, male and female front-line nurses at The State Hospital (TSH) Carstairs, NHS Scotland will be invited to participate in the research. The most recent workforce report from TSH indicates 304 ward nursing staff in post (The State Hospital, 2013-2014).

Recruitment will take place as follows:

- Participants who are eligible will be contacted directly and sent information packages including a study information leaflet. Individuals will then be given at least two weeks to read through the information and consent or decline to engage in the study.
- The researcher will arrange a time and date for the interview that is convenient for participants to reduce any disruption to nursing staffs' schedules.
- Participation will be both confidential and voluntary and all interview data

anonymised using pseudo-names and redaction where appropriate. It will be made clear to participants that taking part in the study or not will not affect their employment within the hospital and that their data will be anonymised and confidential.

The researcher will keep in regular contact with staff in order to promote the study and discuss any difficulties or questions that may arise. The researcher will promote the study as nurse meetings where possible. The researcher will be transparent about her dual role as a postgraduate student and trainee clinical psychologist. It will be made clear to all participants that participation in (or declining of) the study will not affect their employment or work-place treatment or rights. **See Sections 3.3, 4 and 4.2** for further details on sample, recruitment and inclusion/ exclusion criteria.

Measures & Materials

A background information form will be designed for the purpose of the study to collect basic demographic information from participants. Additionally an 'experience of violence and aggression history schedule' will be created for the study. This will be used at the start of interview to collect a self-reported history in order to provide information regarding number and nature of violence incidents.

A study-specific semi-structured interview schedule will also be created. This will follow grounded theory methodology and guidance by Charmaz (2006). It doing so, it will be short and fairly general employing use of open-ended questions and prompts in order to encourage participants to tell their own stories without leading or bias from the researcher. **See Section 3.4** for further details on these materials.

Ethical Considerations & Research Approval

In the first instance the project will be submitted as a proposal to the research and development committee at The State Hospital. Assuming approval is sought, application for ethical approval will then be submitted to The Psychology Research Ethics Committee (PREC) at the University of Edinburgh. As the proposed study is focused solely on contact with NHS staff and no patient data is being accessed, it will not require NHS Research Ethics Committee review or Caldicott approval. However it is still vital that appropriate information governance and data protection approaches are embodied to protect staff as research participants.

As such, participation will be voluntary and confidential within standard clinical guidelines. The researcher will be transparent about her dual role as a postgraduate student and trainee clinical psychologist. It will be made clear to all participants that participation in (or declining of) the study will not affect their employment or work-place treatment or rights. Interview data will be anonymised and stored according to the Data Protection Act and advice from the

Research and Development manager for TSH and The Forensic network (Jamie Pitcairn) **See Section 3.4** for further detail.

Procedure

Eligible participants will be contacted directly and sent information packages including a study information leaflet. Individuals will then be given at least two weeks to read through the information and consent or decline to engage in the study.

Interviews will be conducted by the main researcher either before or after the participant's shift at TSH in staff premises away from the wards (e.g. the learning and development centre) in order to try and increase convenience to maximise participation.

Participants will complete an information and consent form and a background information (demographics) form. The interview will then start with a brief discussion around historical experience of violence and aggression before the actual interview schedule begins. Interviews will aim to be no longer than 60 minutes to be as least burdensome as possible. Interviews will be recorded using a password protected digital voice recorder and then transcribed verbatim by the first author before grounded theory analysis takes place.

Data Analysis

Interviews will be transcribed verbatim and then analysed using grounded theory methods following guidelines by Charmaz (2006). **See Section 5** for further detail of analysis.

Quality Control In Qualitative Research Methods

Literature indicates that whilst qualitative research methods such as grounded theory have been invaluable in the advancement of psychological and nursing literatures; there remains concern with how qualitative methods are being utilised (Elliott & Lazenbatt, 2005; Yardley, 2000). Ultimately this raises doubt regarding the credibility of such methods. Resultantly, it is paramount for researchers employing these methods to demonstrate quality in their research in order for it to make a valid contribution to the existing literature.

Elliott and Lazenbatt (2005) conclude that whilst many criteria for quality checking exist, there is currently no national or international consensus on a definition for 'best' research practice in qualitative research. To mitigate this, literature suggests that researchers employing a qualitative approach should focus on the individual research methods constructing that approach (Long & Johnson, 2000). For instance in grounded theory the researcher should focus on concurrent data collection and constant comparative analysis, theoretical sampling, memo-writing and member-checking; and should not treat these aspects as optional concepts within the grounded theory process, but rather as important concepts which impact on the

quality of the research overall (Elliott & Lazenbatt, 2005). Below each of these concepts is considered in terms of the current proposed study (*see also Section 5*):

Concurrent Data Collection and Constant Comparative Analysis:

Once initial data is collected and transcribed, data analysis will begin with line-by-line coding looking to identify initial common codes. The process of data collection will initially be continuous alongside coding; the researcher will return to the field to collect further data and continue exploration, analysis and data collection until theoretical saturation is reached (Glaser, 2013). Constant comparative analysis of codes will be employed to allow for themes to develop. This approach helps to make sure that data is not being forced into categories as the process develops; as such the categories truly represent the data. Additionally the process allows the researcher to ascertain whether initial findings stay constant when additional data is gathered (Elliott & Lazenbatt, 2005). Essentially, these concepts help to ensure that data collected leads to accurate findings which truly represent the phenomena being investigated.

Theoretical Sampling

In accordance with Charmaz (2006) theoretical sampling will be employed to refine emerging categories. This will help guide questions utilised in data collection to ensure that the emerging theory is theoretically sound and complete whilst being 'grounded' in the data (Elliott & Lazenbatt, 2005; Glaser, 2013).

Memo-Writing

Memo-writing will be used to help the researcher to recognise their own assumptions and biases, and how these may have impacted on, or affected the data collection or analysis (Elliott & Lazenbatt, 2005). Combined with comparative analysis, this process will allow the researcher to check whether the memos fit into the emerging theory; any that do not fit will be discarded (Streubert-Speziale & Carpenter, 2003). Ultimately memo-writing will reduce likelihood of subjectivity and increase the accuracy of research findings.

Member-Checking

The process of member-checking helps to ensure that data is not being misinterpreted during analysis, and thus aims to improve the accuracy of the emergent theory and overall validity of findings. In the present study, participant feedback and validation will be sought at two stages to increase credibility. Initially, during interviews paraphrasing and reflective summaries will be used and then participants will be questioned in order to determine the accuracy of the researcher's understanding. Secondly, member-checks will be completed after the initial analysis by sharing findings with the participants involved. This gives opportunity for

participants to either affirm that findings reflect their views and experiences, or contest findings. Overall this aims to improve the accuracy of findings and improve the study's credibility.

Emergent themes will also be cross-validated through a second literature review. Moreover, supervision will be used throughout the research process with both an academic and field supervisor. Supervision will provide a forum for cross-checking of coding strategies and open discussion of any researcher bias or subjectivity (Yardley, 2000). This process can be helpful even without employing complete multiple coding of the entire dataset (Barbour, 2001) and so can promote research of greater quality whilst being effort, time and cost effective.

3.2.1 In which aspects of the research process have you actively involved, or will you involve, patients, service users and/or their carers or members of the public?

Highlight as appropriate.

IRAS A14-1

Design of the research	Analysis of results
Management of the research	Dissemination of findings
Undertaking the research	None of the above

3.2.2 Give details of involvement, or if none, please justify the absence of involvement

- Nurses who care for patients on wards at The State Hospital will be directly involved in the research as they will be interviewed to provide data for analysis (see Section 5.1. on member-checking).
- Initial codes will be fed back to participants
- Findings will be disseminated to staff at The State Hospital- nursing staff including participants will be invited along to this (Journal Club), participants will also be provided with a summary of results.
- Patients and the public will not be involved in the study as the research is concerned with the experiences of nursing staff.

3.3 List the principal inclusion and exclusion criteria

IRAS A17-1 and IRAS A17-2

Inclusion criteria:

- Be either a registered nurse or unregistered nursing assistant employed at The State Hospital
- Have completed all mandatory training for working on wards at TSH
- Have worked at TSH for a minimum of 1 year
- Participants must 18 years old or above.
- Be able to both speak and understand the English language.

Exclusion criteria:

- Non ward-based staff/nursing staff. There are nursing staff (e.g. nurse therapists who are registered nurses) who do not work front-line on the wards providing day to day care.
- Staff from intellectual disabilities ward as reasons, attributions, processes and reactions related to violence may be different from other wards.

3.4 How will data be collected?

If quantitative, list proposed measures and justify the use of these measures. If qualitative, explain how data will be collected, giving reasonable detail (don't just say "by interviews".)

The researcher will be available to answer any questions about the study

- 1. Informed consent-** will be obtained in order for an interview to go ahead.
- 2. Experience of Violence and Aggression History–** A self-reported history will be collected at interview in order to provide information regarding number and nature of violence incidents at the hospital for each staff member; this may help to better understand patterns and themes emerging within the data.
- 3. Demographics -** minimal demographics will be collected to comply with journal requirements for potential submission for publication. Information will include age, gender, length of employment with TSH, qualified registered or unregistered

nursing status.

4. **Semi-structured interview** - A semi-structured interview will be designed for the purpose of the study. Questions and prompts will be open-ended to allow for rich data to be collected that cover broad areas relating to violence and aggression on the wards at TSH and their experiences of predicting it and their reactions to it. The interview will start with a question aimed at engaging the individual and will end on a question aimed at reducing distress and closing the interview.
5. All interviews will be audio recorded on a secure password protected recorder at TSH. Interviews will then be transcribed verbatim by the researcher. Any information that is identifiable will be removed and pseudo names will be used. The information will be stored both in a locked draw at The State Hospital during transcription, and on a secure password protected computer. It will be securely destroyed after transcription in accordance with the Data protection Act and advice from the research and development manager at TSH. Resulting transcriptions will be anonymous. Dedoose (2015) software will be used to aid analysis.

Section 4: Sample Size

4.1 What sample size is needed for the research and how did you determine this?

For quantitative projects, outline the relevant Power calculations and the rationale for assuming given effect sizes. For qualitative projects, outline your reasoning for assuming that this sample size will be sufficient to address the study's aims

IRAS A59 and IRAS A60

The sample will be purposefully selected and will focus on ward-based, front-line nursing staff at TSH. The study will aim to continue sampling until theoretical saturation is reached; where no new themes or data are emerging as suggested by Charmaz (2006) and Glaser (2013). In doing so it will aim for a minimum of 12 participants as this has been indicated to be a sufficient sample size to attain theoretical sufficiency (Guest et al., 2006).

The researcher will keep in regular contact with staff in order to promote the study and discuss any difficulties or questions that may arise. The researcher will promote the study as nurse

meetings where possible. The researcher will be transparent about her dual role as a postgraduate student and trainee clinical psychologist. It will be made clear to all participants that participation in (or declining of) the study will not affect their employment or work-place treatment or rights.

4.2 Outline reasons for your confidence in being able to achieve a sample of at least this size

E.g. give details of size of known available sample(s), percentage of this type of sample that typically participate in such studies, opinions of relevant individuals working in that area

The most recent workforce report from TSH indicates 304 ward nursing staff in post (The State Hospital, 2013-2014). For the minimum sample size of 12, the researcher would therefore only need to recruit 3.9% of the total nursing staff population at the hospital.

Section 5: Analysis

5.1 Describe the methods of analysis (statistical or other appropriate methods, e.g. for qualitative methods) by which the data will be evaluated to meet the study objectives

IRAS A62

Interviews will be transcribed verbatim. Transcribed interviews will be analysed using grounded theory methods following guidelines by Charmaz (2006). Dedoose (2015) software will be used to aid analysis. Notes will be written during and after the interview to capture information potentially missed by audio-recording alone (e.g. facial expressions). As directed by Charmaz (2006), transcripts will initially be coded line-by-line and then common codes will be organised into higher-order categories. Line-by-line coding ensures that analysis is actually grounded and that higher-level categories and, resulting theoretical formulations, have truly emerged from data, as opposed to being imposed on it by the researcher and any bias (Glaser, 2013).

Constant comparative analysis of codes will allow for themes to develop. Theoretical sampling will be employed (Charmaz, 2006) to refine emerging categories. Reflective memo-writing will be utilized throughout data collection and analysis. Iterative coding will also be used to further

ensure that the understandings are coming from the data; initial codes will be re-visited to see if they fit with broader emerging themes (Charmaz, 2006; Glaser, 2013).

The process of coding and analysis will initially be continuous alongside further data collection. The researcher will complete some initial interviews and the resultant transcriptions and then explore this data for initial common codes; links will be established between categories. The researcher will return to the field to collect further data and continue exploration, analysis and data collection until theoretical saturation is reached (Glaser, 2013).

Member-checking will be employed to increase validity of the study findings. In doing so participant feedback and validation will be sought at two stages to increase credibility. Initially, during interviews paraphrasing and reflective summaries will be used and then participants will be questioned in order to determine the accuracy of the researcher's understanding. Secondly, member-checks will be completed after the initial analysis by sharing all of the findings with the participants involved. This gives opportunity for participants to either affirm that findings reflect their views and experiences, or contest findings. Overall this aims to improve the accuracy of findings and improve the study's credibility. The themes will also be cross-validated through a second literature review.

Section 6: Project Management / Timetable

6.1 Outline a timetable for completion of key stages of the project

E.g. ethics submission, start and end of data collection, data analysis, completion of systematic review

Year of study	Month	Stage	Notes	
1st	July 2016	Submission of research proposal	-Use feedback to start prepping ethics application.	
1st	July –August 2016	Begin ethics application preparations and prepare resources	- Create participant information and consent forms; seek feedback regarding readability. -Prepare and develop interview schedule	

			<ul style="list-style-type: none"> -Ensure necessary software installed, e.g. Dedoose (2015) software. - Finalise recruitment procedure. - Determine final list of what participant access permissions will need to be obtained, e.g. IRAS, NHS and University 	
1st	July – August 2016	Submit idea to TSH research committee for further feedback	-Use feedback in developing final stages of ethics application	
1st	Early September 2016	Submit ethics application	- Expect roughly 6 weeks for response	
2nd	October 2016	Prepare for data collection and storage	<ul style="list-style-type: none"> -Create secure database - Establish secure location for physical data storage 	
2 nd	End October 2016 - September 2017	<ul style="list-style-type: none"> -Participant recruitment -Data collection (pending favorable ethical decision) Start write-up of introduction and methodology sections 	<ul style="list-style-type: none"> - Input data into secure database - Develop initial section of introduction - Submit methodology to supervisors for feedback. 	
2 nd	March 2017	Start systematic review	-Develop & refine question	
2 nd	Sept 2017	Write up - re-draft introduction and changes from feedback to method section.	-submit for further supervisor feedback	

3 rd	July – October 2017	-Interview transcription -Initial descriptive analysis -Grounded theory analysis	- Supervisor feedback for analyses sections	
3 rd	Nov 2017 – Jan 2018	Systematic review write-up of introduction and analyses.	- Supervisor feedback of systematic review so far- introduction and analyses.	
3 rd	Feb-March 2018	Finish systematic review	- Discussion - Supervisor feedback on final draft of systematic review	
3 rd	March 2018	Final thesis write up	- Finish outstanding sections & changes from earlier feedback - Finalise referencing - Formatting - Binding	
3 rd	April 2018	Final thesis draft to supervisors		
3 rd	May 2018	Final submission of thesis		
3 rd	June - July 2018	Prepare for viva Plan disseminations and present to psychology team at TSH, plan for wider dissemination at TSH.	- practice mock vivas with supervisors - commence application for relevant publications	
3 rd	Aug 2017	Submit for publications and poster presentations		

Section 7: Management of Risks to Project

7.1 Summarise the main potential risks to your study, the perceived likelihood of occurrence of these risks and any steps you will or have taken to reduce these risks. Outline how you will respond to identified risks if they should occur

1. Recruitment difficulties and non-attendance of interviews

There are a limited number of nursing staff at TSH, however recruiting 12 participants only calls for involvement from 3% of ward-based nursing staff, so it seems possible to reach at least the minimum number of participants if not more. Shift patterns are busy and many staff travel long distances due to the remote location of the hospital which could impact on their availability to participate. These risks will be minimised by:

- Early recruitment.
- Promoting the study to nurses at staff meetings and via email
- Having the support of other staff to help promote the study and recruit suitable participants.
- Arranging interviews to fit with work and travel schedules and being flexible on location.
- Recruiting from all suitable wards across the hospital.
- Promoting the study to the nurses as a way to get their voice and needs heard, which may help improve the work based environment for them and their patients in future.

2. Distress to participants

Some participants may become distressed during the interviews as the questions look at past experiences and violence. Therefore participants will be given the option to terminate the interview at any point and will be immediately debriefed or offered this at a later date. The researcher will also provide information on staff counseling and services available for free confidential support outwith the hospital.

3. Management of disclosures

At the beginning of the interview participants will be informed that standard clinical confidentiality procedures will apply (both verbally and in the consent form). They will be informed that the interview will be confidential unless they disclose anything that suggests that there is a risk of harm to self or others or that a crime has been or is about to be

committed. In this instance the researcher will need to inform the appropriate authority and members of staff at the hospital.

4. Loss of data

During the recording of interviews equipment could malfunction resulting in loss of data. This limitation will be overcome by using two recording devices. The data will also be frequently backed up to prevent loss of data.

Section 8: Knowledge Exchange

8.1 How do you intend to report and disseminate the results of the study?

IRAS A51

At the end of the study participants will receive a written summary of the results. The results will also be disseminated to The State Hospital through both a summary report and presentation (e.g. at the Journal Club). The results will also be disseminated through the presentation of research papers at relevant conferences, and journal articles will be submitted for publication in relevant scientific journals (e.g. International Journal of Forensic Mental Health; Journal of Psychiatric and Mental Health Nursing; The Journal of Forensic Practice, The Journal of Advanced Nursing).

8.2 What are the anticipated benefits or implications of the project?

E.g. if this is an NHS project, in what way(s) is the project intended to benefit the NHS?

The major contributions of this study will be to investigate how forensic mental health nurses both predict and cope with incidents of violence and aggression on the wards in a high secure setting. To my knowledge no previous research has investigated this area in a qualitative way and as such given a voice to staff in order to better understand their experiences and explain patterns observed in quantitative data. As such, the present research could have several important implications:

1. This investigation may help to improve understanding on how day to day, short-term risk assessment is being taken out on wards in high secure environments, for instance

clarifying whether staff are solely relying only on ward charts and standardised assessments or drawing on interactions with patients. This could provide information to help build upon or improve nursing staff's skills in detecting potential risk to try and improve earlier de-escalation and reduce risk to staff and other patients.

2. The present study could also help to work toward reducing the number of staff sick days taken in forensic settings and ultimately harm caused to staff (both physical and emotional). In this respect the analysis could help improve understanding of what needs to be in place to better support staff working in secure environments e.g. counseling, changes to debrief protocol, peer support or supervision groups with psychologist.
3. In line with this data could help to make sense of existing statistics by adding a qualitative understanding to why so many nursing staff off sick with stress, depression and anxiety. It may also shed light on why staff are displaying an increase in use of personal alarm calls in high secure settings and may highlight ways to begin to support staff to overcome these difficulties.

8.3 Are there any potential costs for the project?

Outline any potential financial costs to the project, including the justification for the costs (why are these necessary for the research project?) and how funding will be obtained for these costs (how will they be met?) Please separate these into potential costs for the University and potential costs for your NHS Board and note that you should ask your NHS Board to meet stationery, printing, postage and travel costs.

Costs for the project will be minimal. These will include stationery and printing which will be covered by The State Hospital NHS health board. These costs will be approximately £50. Costs will also cover those necessary for the use of Dedoose (2015) software; these costs will be approximately £80 (the programme is charged at \$10 per month for subscription). Alternative software systems are available (e.g. NVivo 10) for free which offer less detailed support, but could be utilised as a back-up should the funding be denied at any point.

Section 9: Any Other Relevant Information

The project has been discussed with the research and development manager (Jamie Pitcairn) at The State Hospital who is keen for the project to go ahead. Before the project can be submitted for ethical approval, the researcher will submit a proposal for the research

committee at The State Hospital. This is outlined in the timeline in Section 6.1 of this document.

Section 11: Confirmation of Supervisors' Approval

"I confirm that both my Academic and Clinical Supervisors have seen and approved this research proposal and have both completed the supervisors' appraisal forms below."

Delete as appropriate

Yes

No

Main Academic Supervisor's Appraisal of Project Risk

Supervisor's Name

Ethel Quayle

Date

07.07.16

Do you consider that the project should proceed in broadly its current form?

Delete as appropriate

Yes

Yes, subject to the revisions
outlined below

No

Outline the reasons for the above response

Highlight any areas of risk to the completion of the project that have not been fully addressed within the proposal and any steps that could be taken to reduce risks

This is a proposal which is supported by the State Hospital and is of clinical relevance. To date there has been little research in this area although in the SH context risk appraisal and management is critical.

Clinical Thesis Supervisor's Appraisal of Project Risk

Supervisor's Name

Joe Judge

Position

Clinical Psychologist

Date

13/07/16

Do you consider that the project should proceed in broadly its current form?

Delete as appropriate

Yes

Yes, subject to the revisions
outlined below

No

Outline the reasons for the above response

Highlight any areas of risk to the completion of the project that have not been fully addressed within the proposal and any steps that could be taken to reduce risks

As outlined by Dr Quayle, the project is supported by the organisation and is of clinical relevance. I anticipate few issues.

Lay Summary

Provide a summary of your project in language suitable for a layperson

500 words

Workplace aggression or violence is a global problem faced by health care workers. Research has shown that mental health nurses are more likely to be physically assaulted, threatened and verbally or sexually abused than any other health profession group. Incidents of violence are on the rise, particularly in mental-health settings, this has caused problems with high staff turnover, burnout and difficulty with recruitment of nursing staff.

There is relatively little research investigating how nursing staff predict or cope with violence and aggression, specifically within secure (forensic) settings. This is interesting as often patients in these settings have a higher tendency to be violent.

For these reasons, the present study is set within a high secure hospital in the UK. There are 4 high secure hospitals in the UK, these hospitals provide care and treatment to people with psychiatric illness who are currently deemed a risk to other people, and at times, to themselves.

The purpose of this study is to investigate the day-to-day strategies nursing staff use to predict violence and aggression on the ward, and to explore their reactions to, and ways of coping with these incidents. Data will be collected by interviewing front-line nursing staff employed at The State Hospital. Interviews will be recorded on a password protected digital voice-recorder, and then typed-up (transcribed) word-for-word onto a password protected computer. Transcriptions will be anonymised; false names will be used to protect the identity of participants. A research methodology approach called Grounded Theory will be used to analyse and interpret the data (interview transcripts).

This investigation may help to improve understanding on how day to day, short-term risk assessment (recognising levels of risk of violence or aggression) is being taken out on wards in high secure environments. This could provide information to help build upon or improve nursing staff's skills in detecting potential risk to try and improve earlier de-escalation and reduce risk to staff and other patients. The research could also help to work toward reducing the number of staff sick days taken in forensic settings and ultimately harm caused to staff

(both physical and emotional). This could help to improve support strategies and provision for staff, and hopefully over time reduce the financial cost of absenteeism.

Combined references for full thesis

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